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BY E. P. POULTON, M.A., M.D. OXON., F.R.C.P. LOND.,
ASSISTANT PHYSICIAN, GUY'S HOSPITAL.

LECTURE II.*

ACIDOSIS IN DIABETES (KETOSIS).

MR. PRESIDENT, LADIES AND GENTLEMEN,—Stadelmann†[2] observed the excessive excretion of acid in severe diabetes and originated the acid intoxication theory of diabetic coma, comparing the condition with Walter's experiments[1] on the effect of administering HCl to rabbits and dogs.

The similarity between the acid poisoning of dogs and the phenomena of diabetic coma is very great. In both there is greatly increased respiration, rapid pulse, increased ammonia excretion, and diminished CO_2 in the blood. It is not surprising that the acid poisoning view was generally adopted—viz., that death was caused by the reaction of the blood being shifted in the acid direction, or, as it is sometimes explained, "the true alkalinity of blood is reduced to zero in diabetic coma." The chief difficulty was, that whereas in dogs the condition could be rapidly improved by administering alkalies, this treatment in diabetic coma produced most disappointing results.

PAVY'S VIEWS ON ACID INTOXICATION.

On this question of acid intoxication Pavy[7] took up an independent attitude.

He believed that the CO_2 carrying power of the blood was so reduced, that CO_2 could not be transported from the tissues in sufficient quantity, and its accumulation in the tissues produced narcosis. This view was at one time the prevalent view in this country. Pavy[7] dismisses the acid intoxication theory of Stadelmann in the following words: "Writers speak of the altered constitution of the blood by the reduction of its alkalinity as the cause of coma connected with acidosis and refer the result to the effect of the altered condition of the blood on the tissues of the body. This, however, amounts only to an assertion which gives no insight into the actual pathogeny of the coma."

The work of Beddard, Pembrey, and Spriggs[8] definitely disposed of Pavy's view.

If carbon dioxide accumulated in the tissues the CO_2 tension in the tissues would be increased. It is not possible to estimate this tension directly, but it would be natural to assume that an increased tension of CO_2 in the renal cells would be communicated to the urine. No increase in the tension of CO_2 in the urine was found.

In the second place, if there was increased tension of CO_2 in the tissues the tension in the blood would be raised, even though the carrying power of the blood for CO_2 might be diminished. The tension of CO_2 in the blood can be deduced from the tension of CO_2 in the alveolar air. They showed that this was greatly diminished in coma and for several days before coma came on.

Pavy's explanation of the temporarily beneficial effect of alkali administration was that the carrying power of the blood for CO_2 was increased by this procedure. This argument implied that the blood in coma is saturated with CO_2, but this is not the case, as it was found that on bandaging the arm and producing stasis the CO_2 content of the blood was increased; in fact, the blood in coma and the precomatose state can combine with very much more CO_2 than it actually contains.

LOW VALUE OF ALVEOLAR CO_2 IN SEVERE DIABETES.

It is obvious that Pavy's view as to how acid intoxication causes death is untenable.

But before considering this matter further I should like to direct your attention to the low values of the alveolar CO_2 in severe diabetes, discovered first of all by Beddard, Pembrey, and Spriggs, especially as this has an important practical bearing on prognosis and treatment.

Various methods are used for making these determinations. Clinically the most popular one both here and in America is Fridericia's.[10 11] The whole determination can be carried out in ten minutes, and it is no more difficult than the ordinary urea estimation in urine. The object of the method is to indicate the degree of acidosis. It is impossible to measure this from the ferric chloride reaction alone; the ammonia ratio in a specimen of urine (i.e., percentage of ammonia nitrogen to total nitrogen) is often used for this purpose; this is an operation for the laboratory, while Fridericia's instrument can be taken to the bedside.

From a number of cases[11] it has been possible to draw up some rough rules as to the significance of the readings of the alveolar CO_2 in respect of the danger from coma. The normal values in the healthy adult lie between 4·5 per cent. and 6·2 per cent., being rather lower in women than in men. In diabetes a value of 2 per cent. means that coma may supervene within 24 hours if no improvement takes place. A patient may go on living for many days with the alveolar CO_2 between 3 and 4 per cent. In the worst event coma will not supervene before three or four days.

Krogh has shown that the CO_2 of the alveolar air is in equilibrium with the arterial blood. This would be expected from the fact that the mean alveolar CO_2 is constant for the time being, and that the blood in the lungs and capillaries presents a large surface, so that equilibrium will be established before it leaves the lungs by the pulmonary veins. The low alveolar values are brought about by increased pulmonary ventilation, which acts by preventing the normal accumulation of CO_2 in the alveoli, though the total amount excreted from the body may be unaltered.

THE THEORY OF NEUTRALITY REGULATION.

To account for this increased ventilation the theory of neutrality regulation has been generally adopted.

This arose out of the work of Haldane. In three papers published at the same time by Haldane, Boycott, Poulton, and Ward[12] it was suggested that the hyperpnœa and the consequent diminution in the alveolar CO_2, both of which were produced by oxygen want, were due to the formation of acid which entered the circulation and stimulated the respiratory centre to increased activity. It was thus suggested that the respiratory centre reacted to acid, and, further, that the normal action of CO_2 was also due to its being an acid. Winterstein,[13] looking at the problem from the physico-chemical point of view, suggested that it was the hydrogen ion concentration of the blood that was the normal stimulus to respiration.

Before considering this question further it may be as well to say a few words on the meaning of hydrogen ion concentration.

In pure water or in any solution there are hydrogen and hydroxyl ions present in the free state. They arise by the dissociation of a molecule of water, thus: $H_2O \rightleftharpoons H + OH$; these ions are constantly being formed from water. Their total number remains constant, and this is expressed by the formula: $C_H \times C_{OH} = \text{constant}$; i.e., $10^{-14·14}$ where C_H is the concentration of hydrogen ions expressed in grammes per litre.

Now, an acid is defined as a substance which produces free hydrogen ions by dissociation when dissolved in water; thus: $HCl \rightleftharpoons H + Cl$, and the effect of adding an acid to water is to increase greatly the number of hydrogen ions (C_H) at the expense of the hydroxyl ions, as the equation $C_H \times C_{OH} = 10^{-14·14}$ always holds.

By the terms acidity, or alkalinity, or reaction of the blood is meant this relation between the concentration of H and OH ions. Of course, it may be expressed either in terms of H—e.g., $C_H = 10^{-7·38}$—or in terms of OH—$C_{OH} = 10^{-6·76}$, since $10^{-7·38} \times 10^{-6·76} = 10^{-14·14}$; but in practice the value for the concentration of hydrogen ions is always used, even when speaking of alkaline solutions, such as blood.

There is one other convention commonly adopted. Instead of using each time the rather cumbrous expression $C_H = 10^{-7·38}$ the exponential is used alone, which is called ph—i.e., ph = 7·35. It will be noted that as the blood becomes more acid the C_H increases, and so the ph diminishes. The most acid value for blood that has been found so far is ph = 6·92 in a case of uræmia shortly before death, and in this case the blood was actually acid.

When the reaction of a fluid is neutral it means that the number of hydrogen and hydroxyl ions are equal, and this may be expressed by ph = poh = 7·07.

The standard method of measuring the hydrogen ion concentration or acidity of a solution is as follows:—

There is determined the potential difference between the solution and an electrode of spongy platinum saturated with hydrogen and projecting from an atmosphere of hydrogen into the solution, the so-called hydrogen electrode. When this potential difference is found a simple calculation gives the value for ph (the exponential of the hydrogen ion concentration).

In the case of blood this method of measurement has passed through many vicissitudes. At first it was not realised that the CO_2 could be readily shaken out of the blood by mechanical agitation, and through loss of this acid the values obtained were too alkaline.

Hasselbalch[14] made a great advance when he first of all saturated blood with CO_2 at a tension equal to the alveolar CO_2 tension and at body temperature, and then measured the potential difference without allowing CO_2 to escape. But even in this case the oxy-hæmoglobin oxidised some of the hydrogen of the electrode, which probably caused inaccuracy.

Peters[15] still further improved matters by using blood with the hæmoglobin completely reduced by hydrogen first of all, he then determined the ph of fully reduced blood at given CO_2 pressures.

The next, and probably the final, step was taken by Parsons,[16] who not only used reduced blood according to Peters's method, but also made determinations on fully oxidised blood by shaking it up with known mixtures of hydrogen, oxygen, and CO_2. After establishing equilibrium he removed the blood and centrifugalised off the corpuscles, keeping the blood all the time at body temperature by centrifugalising it in a vacuum flask, and he finally determined the ph of the separated serum. The ph of Parsons's blood at the alveolar CO_2 pressure saturated with O_2—i.e., practically speaking, his arterial blood, is −7·38.

The theory of neutrality regulation states that—

The reaction of the blood, or its hydrogen ion concentration, is preserved at a constant level by the organism, and means must be provided to compensate for any increase of acid or alkali in the body. So far there are three methods of compensation known. In the case of acid there is a lowering of the alveolar CO_2 by increased pulmonary ventilation, an increase in the production of ammonia which combines with the acid, an increase in the hydrogen ion concentration of the urine, or, in other words, a tendency for the acid to be excreted in the urine in the free state.

* Lecture I. was published in THE LANCET of June 22nd, 1918, p. 863.

† Hurtley[23] has fully reviewed the early history of acidosis, and so it is omitted here.

EVIDENCE IN SUPPORT OF THE THEORY.

The proof of this theory was first made by Hasselbalch[7] on three normal individuals.

Various diets were consumed—an ordinary mixed diet with and without alkalies, a vegetable diet, a meat diet with no carbohydrates; and fasting was also practised. During these periods the alveolar CO_2, the ph in the urine, and the hydrogen ion concentration of the blood saturated with CO_2 at the alveolar CO_2 pressure were measured. The acidity of the urine was increased, and the alveolar CO_2 was diminished during fasting and during the meat period, but the ph of the arterial blood saturated with CO_2 at the corresponding alveolar CO_2 pressure remained constant.

At about the same period that the experiments of Hasselbalch were being made Barcroft was working on somewhat similar lines, but by a completely different method.

He and his fellow-workers had shown that the dissociation of oxyhæmoglobin into reduced hæmoglobin and oxygen is a reaction that depends on other factors besides the pressure of oxygen. A hæmoglobin dissociation curve represents the relation between the oxygen pressure and the percentage saturation of hæmoglobin with oxygen. Among other factors the curve is altered by the presence of extra acid in the blood. There is no need for me to describe the methods used in constructing these curves. They are all described at length in Barcroft's book, "The Respiratory Function of the Blood."[18]

All dissociation curves of human blood have been shown to lie on a curve the formula of which is $\frac{Y}{100} = \frac{KX^n}{1+KX^n}$, according to A. V. Hill, where Y is the percentage saturation, X is the oxygen pressure in mm. and n has a value of 2·5; K is another constant, which, however, alters with the reaction of the blood, the value of K becoming smaller as the acidity of the blood increases.

The normal dissociation curve of the individual is the curve corresponding to the alveolar CO_2 pressure, and all curves of normal individuals lie within certain definite limits. In 23 cases, either observed or collected from the literature by Debenham and Poulton, the outside limits for K were ·000366 and ·000212, the mean value of the series being ·000282.

Applying the method of determining K to pathological conditions the argument has been used, that values for K falling well outside these limits will be abnormal—i.e., if K is below ·00020, it may be inferred that the blood is abnormally acid—i.e., the hydrogen-ion concentration is increased.

Very soon after Hasselbalch had published his proofs of the neutrality regulation with different diets Barcroft, Graham, and Higgins showed a similar relation with Graham's blood by means of the dissociation curve of the blood.

There is yet another relationship that has been used for determining the hydrogen-ion concentration of the blood.

That is the relationship between the CO_2 dissolved physically in the blood, and that combined as bicarbonate. Hasselbalch[19] has modified Henderson's original formula as follows:—

$$ph = \log K_1 + \frac{\log (NaHCO_3)}{\log (CO_2)},$$

where (CO_2) is the concentration of dissolved CO_2 and $(NaHCO_3)$ the concentration of CO_2 combined chemically as bicarbonate in the blood, and K_1 is a constant, depending chiefly on the amount of dissociation of the $NaHCO_3$. Here, again, there will be no object in explaining how this formula is arrived at. In order to use it to find the ph of any blood the only data it is necessary to find experimentally are the pressure of CO_2 and the amount of CO_2 contained in a specimen of blood which has been subjected to this pressure.

ACID INTOXICATION.

At the beginning of this century the majority of people, following Stadelmann and Magnus Levy, held that the acid-intoxication theory was sufficient to explain death in diabetic coma, but voices were raised from time to time in favour of a different view—viz., that the acid substances aceto-acetic and β-oxybutyric acids were in themselves poisonous and caused the condition.

The essential difference between these two views can be illustrated by a very simple example. If an animal were intravenously injected with a dilute solution of HCl, it would be possible to render its blood actually acid, when a sufficient amount had been injected, and death might be due to this alone; this would rightly be called "acid intoxication." If dilute hydrocyanic acid were used for the injection death would occur before any perceptible alteration in the blood reaction had occurred, owing to the specific poisonous character of the acid. "Acid intoxication" means the accumulation of acid quâ acid—i.e., the increase in concentration of hydrogen ions. "Specific poisoning by an acid" means an effect produced by the anion of the acid, or by the acid in an undissociated state.

The experiments generally quoted as being most conclusive with regard to this question are those of Michaelis and Davidoff, and later Masel,[20] working under Michaelis's direction. No alteration in the ph was observed, except in one case when the patient was actually in coma, just before death, when the blood was more acid than normal.

The experiments are not really satisfactory. Venous blood was taken from the vein at the elbow; it was diluted with five times its volume of 0·85 per cent. NaCl and the determinations were carried out at room temperature. The most serious objection to them is the dilution of the blood employed. No doubt this did not produce much effect with the blood of healthy men, but it is unsafe to make this assumption in disease; small changes might have been completely obliterated by this process. Another objection is that no account was taken of the CO_2 pressure in the blood.

I used the method of Barcroft[21]—viz., determining the constant K from the blood dissociation curve.

Eight determinations were made on seven patients. In six of them the blood reaction, as inferred from the value of K, was normal, and of these six patients three were drowsy and one was described as "fairly sensible" and died in coma 18 hours later. Two determinations were made on patients in deep coma, and in one K was ·000216 and in the second it was ·000207, these values tending to be just on the acid side. The last patient had been investigated 22 hours earlier, when he had air-hunger and was drowsy and the blood gave a K of ·000297, so that in deep coma the blood had definitely shifted in the acid direction.

The fact that the patients showed definite drowsiness, but still had a normal blood reaction, argues against the acid intoxication theory. This argument is confirmed by considering the change in the value of K with exercise.[18] In a normal man, walking up 1000 feet in 30 minutes caused a change in K from ·000292 to ·000168. This exercise entailed no distress; "it was the fastest rate at which respiration could be comfortably performed through the nose." The change in K was greater in this case than in the depth of coma. Hence, obviously, diabetic coma is not an acid intoxication.

In other cases (Table V.) the effect of intravenous sodium bicarbonate was tried.

TABLE V.—*Effect of Sodium Bicarbonate on Blood Reaction.*

Patient.	—	Alv. CO_2 mm.	CO_2 used	K.	Sod. bicarb.*
W. B.	11 A.M., March 11th.	14·4	—	—	—
	8 P.M., " 12th.	8·7	—	—	—
	After injection.	21·6 (calc.)	25·9	·000374	24 g. in 1100 c.cm.
M., 40	4 P.M., Nov. 23rd.	22·0	21·4	·000251	—
	11 A.M., Dec. 1st.	9·5	—	—	—
	7.15 P.M., " " after injection.	14·0	10·9	·000241	22·5 in 750 c.cm.
M.	5 P.M., Nov. 27th.	5·4	—	—	—
	Injection "	—	—	—	27·5 in 1100 c.cm.
	6.45 P.M. "	18·9	21·0	·000346	—
	11.15 P.M. "	16·5	—	—	—
A., 11	Feb. 26th.	—	8·7	·000144†	—
	After injection.	—	11·0	·000574	22 in 1100 c.cm.
Normal limits of variation in healthy men.		43 / 35	—	·00035 / ·00021	—

* Intravenous infusion in grammes.

† It will be noticed that in this case of coma the blood was distinctly acid.

By this means it was found that the value for K could readily be shifted to the alkaline side of normal, the highest value being ·000374 in W. B. and A. 11. With W. B. the sodium bicarbonate produced no difference in the comatose state. M. 40, after injection, is described as "not being too deep in coma to be roused if necessary." With A. 11 the pulse was improved and air-hunger became less; the prick of a needle caused him to stir. In the case of M., where the coma had come on very acutely, a remarkable improvement was noticed at 8.30 P.M. Consciousness was regained. She relapsed after a few hours. The fact that acid-poisoned rabbits recover even at the point of death by this treatment is another argument against the acid-poisoning view in diabetic coma.

Hasselbalch[22] has made criticisms on these results, as he finds that there is disagreement between the ph as inferred from K and the ph determined by his method of the free and combined CO_2. His criticisms refer to absolute values of K, and do not apply to cases where a change of K was noticed in the case. Further, his results are not conclusive, as he obtained much higher values for K than other people have. Donegan, Parsons, and Poulton are now working at this subject again, using all these three methods of determining ph; unfortunately, the results are not yet complete.

TOXICITY OF ACETO-ACETIC ACID.

To test the toxicity of aceto-acetic and β-oxybutyric acid feeding experiments have been carried out from time to time.

Neither of these substances is poisonous when administered to normal human beings or animals, but there is evidence that if the animal is made first of all diabetic by extirpation of the pancreas aceto-acetic acid is poisonous. Hurtley[23] believes that in human diabetes aceto-acetic acid is the poison that causes coma. The substance is produced in the tissues generally owing to abnormal metabolism, as was considered in the last lecture, and passes to the liver, where its conversion into the innocuous β-oxybutyric acid takes place. Certainly the chemical constitution of aceto-acetic acid—i.e., its state of unsaturation, when written out in the enolic form $CH_3COH = CHCOOH$, suggests that it is more active than the fully saturated β-oxybutyric acid, $CH_3CHOH—CH_2COOH$, and also presumably more poisonous.

This view receives its chief support from some recent results of Kennaway's, on the point of publication.

In a series of 11 cases of diabetes, in which he examined the blood after death, he found the following range per 100 c.cm. blood:—

Acid.	Min.	Max.	Ratio.
Aceto-acetic	0·053 g.	0·109 g.	1:2
Oxybutyric	0·040 g.	0·215 g.	1:5·5

The comparatively small range of variation in the amount of aceto-acetic acid at death and the wide variations in the β-oxybutyric acid are strongly suggestive that the former body is the more poisonous of the two.

In a single case of diabetes examined just before the patient was discharged from hospital, 100 c.cm. of blood contained 0·036 g. aceto-

acetic and 0·018 g. of β-oxybutyric acid. Clinically, there was acidosis present, but not in sufficient amount to cause any great alarm. It is obvious from the blood condition that the aceto-acetic acid had not accumulated enough to cause coma.

Following Neubauer, Kennaway has shown that the relative amount of β-oxybutyric to the total acetone bodies excreted in the urine increases up to a maximum as the acidosis increases in severity and remains constant at this level—i.e., 70 per cent.—until death supervenes. This fits in well with Hurtley's view. When acidosis begins, the aceto-acetic acid is present in small amount, and conversion into β-oxybutyric acid only takes place to a small extent; possibly the body does not get accustomed to this conversion until later. As the amount of aceto-acetic acid produced becomes greater, the conversion reaches a maximum, which is about the same for all individuals.

Another case of Kennaway's shows that for two or three days before the onset of coma there is a gradual diminution in the concentration of the acetone bodies in the urine, and this is associated with a corresponding fall in the alveolar CO_2. This argues a diminishing power on the part of the kidney to excrete these substances before death, so that they accumulate in the blood.

"COMPENSATED ACIDOSIS."

So far we have seen that the most probable explanation of the cause of coma is the toxic action of aceto-acetic acid and its salts.

The most obvious explanation of the low values of the alveolar CO_2 and the CO_2 content of the blood is that it is a compensatory process to allow of the transport of large quantities of acids in the circulation. There is no evidence that this compensatory process is harmful in itself.

It has been shown that the hydrogen-ion concentration is not much altered by the process. As the dissociation constants of these two acids are known, it is possible to calculate what proportion of them will be circulating in the blood in the free state. In the case of aceto-acetic acid the percentage is 0·02, and in the case of β-oxybutyric acid it is 0·15. It is obvious that by far the largest part is circulating in the form of salts, and the base necessary for the formation of these salts is obtained chiefly from the sodium bicarbonate of the blood, so that the CO_2 content of the blood is diminished. This diminution of the CO_2 content is, of course, brought about by increasing the pulmonary ventilation.

Hasselbalch has devised a convenient term for the condition just described.

He calls it a "compensated acidosis," meaning by the term a circulation of abnormal acid in the blood with perfect adjustment of the other acids and bases, so that the hydrogen-ion concentration remains unaltered. In other conditions, as will be pointed out in the next lecture, this compensation is not complete, the abnormal acids accumulate to a larger extent than is accounted for by the fall in the CO_2, and the hydrogen-ion concentration is increased; this condition is called an "uncompensated acidosis."

There is yet another condition possible, and that is when the pulmonary ventilation overshoots the mark, so that more CO_2 is washed out, and leaves an excess of base behind in the blood over that which is required to combine with the abnormal acids. For this condition the term "over-compensated acidosis" may be used. It means an abnormally low hydrogen-ion concentration.

There is some evidence that the condition of over-compensation may occur in diabetes.

Hurtley and Trevan [24] have shown that certain bodies which contain the enolic group—COH = CH—have a stimulating action on the respiratory centre, quite apart from any acid reaction they may possess. This effect is produced in the intact animal and in the decerebrate animal so long as the posterior corpora quadrigemina are intact. The substances tried have been ethyl aceto-acetate, sodium aceto-acetate, acetyl acetone, sodium salicylate, and the disodium salt of acetone dicarboxylic acid. Definite hyperpnœa is obtained and the alveolar CO_2 is diminished and remains at a low level, long after any record of hyperpnœa can be obtained. The meaning of these results is that in diabetic acidosis the stimulating action of sodium aceto-acetate may produce a hyperpnœa out of all proportion to the amount of acid present.

Stillman, Van Slyke, and others have published a study in diabetes which shows that this may actually take place.

In a number of cases showing acidosis in different stages of severity, the alveolar CO_2 was determined, and also the volume of CO_2 contained in the blood, and in the plasma at a standard pressure of 5·5 per cent. CO_2—i.e., about 39 mm. In certain cases it was found that the CO_2 content of the blood and plasma was within normal limits, while the alveolar CO_2 was much reduced. In other words, the blood contained less CO_2 than it should to neutralise the various bases present, so that the hydrogen-ion concentration must have been diminished. These observers find that when acidosis is very severe—i.e., with an alveolar CO_2 of 2 per cent.—the alkali reserve and the alveolar CO_2 correspond (i.e., the acidosis is compensated); it is in the milder cases of acidosis that the alveolar CO_2 is too low.

A possible explanation of this fact lies in Kennaway's β-ratio. It has been shown that in severe acidosis the proportion of β-oxybutyric acid reaches a maximum, which is 70 per cent. of the total acids. The aceto-acetic acid must be 30 per cent., including the acetone. In milder states of acidosis the aceto-acetic acid may be 50 per cent. or 60 per cent. of the total acids, as its conversion into β-oxybutyric by the liver is not so complete, and hence it may exert its specific stimulating action on the respiratory centre and produce the condition of over-compensated acidosis or an abnormally alkaline blood.

SUMMARY.

Diabetic acidosis means a collection of acids in the blood with a compensatory lowering of the CO_2. Sometimes an over-ventilation produces an alkaline blood. Coma is caused by the poisonous action of aceto-acetic acid. The actual coma may be due to fall in blood pressure, the aceto-acetic acid acting primarily on the circulation. It is remarkable how invariably the consciousness of the patient varies with the strength of the pulse. A fall in intraocular tension is another well-known indication of the onset of coma.

TREATMENT.

The best method is to prevent the formation of these acids.

This must be done by diet, and especially by lowering the metabolism by fasting and underfeeding, as described in Lecture I. Occasionally carbohydrates may be given, especially in acute cases due to faulty dieting.

Secondly, sodium bicarbonate does sometimes produce excellent results.

But this can only occur through its helping in the elimination of the acids by the kidneys, and hence it will be no good giving it just at the end, during coma. It answers best in cases of acute coma due to faulty dieting. However, where there is a choice of methods it is better treatment to prevent the formation of these acids than to allow them to be formed and give sodium bicarbonate to cause their elimination from the body. There are disadvantages in giving large doses; there is water retention and often œdema, and with intravenous injections convulsions have been observed on many occasions. Joslin objects to its use altogether, as he considers that the formation of acid bodies may actually be kept up by giving it, but he does not give any actual proof of this.

Sodium bicarbonate may be administered by the mouth or intravenously.

It may also be given subcutaneously, but in this case it is essential to neutralise it after it has been sterilised, as by this process CO_2 is driven off, and the solution becomes alkaline, and may cause gangrene. The neutralisation is carried out according to Magnus Levy's plan, by adding a little phenolphthalein, and either bubbling CO_2 through it, or, what is an easier plan, by adding drop by drop some fairly strong HCl till the colour is discharged.

In giving an intravenous injection it is essential to cut down on the vein. It is very difficult to get the veins to stand out when coma is approaching, and there is the added danger, if the attempt is made, to run in the solution directly through the skin by a sharp needle, that some of the solution may get into the tissues.

There is another point; in long-standing ketosis cases there is a draining of many inorganic substances from the body, and it is a good plan to supply these in small doses, daily by the mouth—i.e., potash, soda, lime, and magnesia. It is not so important to supply phosphates, as these arise from the protein of the food.

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THE ROYAL SANITARY INSTITUTE.—Men discharged from the Navy or Army on account of wounds, disease, or other disablement contracted during naval or military service, are allowed to enter for the Institute's course of lectures and for the Institute's examinations at half-fees, provided that their disability is not such as to prevent them carrying out the duties of the office to which the examination applies.

THE "SWINEY" PRIZE.—The council of the Royal Society of Arts gives notice that the next award of the Swiney prize, consisting of a cup value £100 and money to the same amount, will be made in January, 1919, for a work on medical jurisprudence. The award is made jointly by the Royal Society of Arts and the Royal College of Physicians. Any person desiring to submit a work in competition or to recommend any work for the consideration of the judges should do so by letter, addressed to the Secretary of the Royal Society of Arts, John-street, London, W.C.2. The last medical recipients were (1889) Dr. Charles Meymott Tidy, (1899) Dr. J. Dixon Mann, (1909) Dr. Charles Mercier.

DELAYED PRIMARY SUTURE.[1]

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THE object of this paper is to bring to the notice of surgeons the desirability of performing the so-called "delayed primary suture" of wounds as frequently as possible in cases which permit of its being carried out.

It admits of no discussion that, wherever possible, the ideal method of treating a wound, after the cleansing and excision of damaged tissues, is to perform primary suture; but there are conditions which will, no doubt, be remedied with experience where such is not possible. The so-called "delayed primary suture" becomes the next most important line of treatment.

This paper deals with the records of 100 consecutive cases treated at —— General Hospital, B.E.F. In order to emphasise important points which stand out as the result of observation it is proposed to discuss these records under three headings:—

I. The type of case which has come for treatment, the treatment it has previously received, the mode of selection of the case, the treatment immediately preceding suture, and the details of the operation performed.

II. To tabulate the results obtained in the cases treated.

III. To lay down certain general principles which appear to be derived from my observations.

I.

The wounds have been of all types (excision had been performed in all)—e.g., excisions of skin only, skin and muscle, compound fractures embedded in muscle and those lying in subcutaneous situations, amputation stumps, and injuries connected with joints.

In all the cases received it had been the object of the surgeon at the casualty clearing station (under instructions from the authorities) that this method of treatment should be adopted at the base, so that careful excisions of damaged tissues had been carried out and careful packing of pockets of the wounds instituted; the chief packs used were flavine and bipp, but ether and plain gauze packs also came to the base. It is not my intention to enter into any discussion as to how these drugs act when applied in this manner. Suffice it to say that this is what had been done to the cases treated.

On arrival the packs were not removed until the patient was taken to the theatre and anæsthetised. The top dressings were then removed and the skin carefully washed with picric acid (2 per cent. alcoholic solution) before the pack was disturbed. As will be pointed out later, it is detrimental to the healing of the wound if this is carried out before this stage is reached.

The pack was always removed with forceps, the fingers not being put into the wound at all. Rough removal of the pack was studiously avoided so as not to start hæmorrhage, which is probably a factor of great importance in obtaining a successful result.

The characteristic appearance of the wound, which has been packed with gauze soaked in flavine (1 in 2000), on the second to fourth day, is that it has a dry surface, dull in appearance, slightly sticky, without discharge or granulation tissue formation; a certain yellow discolouration is common but not always present. At a later date, a thin sticky exudate forms and may be seen in the earlier stages in the case of deep wounds of muscles. It is uncommon to see a purulent discharge, but still such cases came under observation and were put aside until the wounds had been further cleansed.

Bipped wounds have a somewhat similar appearance, but in addition minute particles of the ointment are present; the surface is rather oily than sticky. In both cases there is a tendency for the skin edges to become stuck to the underlying tissues.

For the most part the cases treated had had a single pack only applied, some two packs, and in one case sewn up on the seventeenth day several packs had been used. Even in that case there were no granulations; the formation of granulations seems to be delayed by the application of drugs tightly packed into the interstices of freshly damaged tissues. After removal of the pack local treatment to the wound was for the most part avoided, except in cases where there had been bleeding in the removal of the pack or there was old blood clot in the wound left from the original operation. Normal saline solution or flavine was used to get rid of such foreign material. Cases have exceptionally been sutured where actual suppuration was present, but only with the object of diminishing the size of the wound, thus avoiding large areas from which absorption could take place, and also relieving the patient from repeated and painful dressings.

To come to the *method of suture*. In all wounds the skin was sutured with silkworm gut. In deep wounds (that is, including muscle excisions) penetrating, perforating, or gutter in type, the muscles were sutured with catgut, and on occasion with thread, with the object of preventing the formation of a deep-seated dead space. This is an important point and requires to be carried out with great care. In many cases the muscles were sewn in layers with buried stitches. Complete suture of the skin was the rule wherever possible. Partial suture had to be resorted to in some instances owing to the considerable loss of tissue as the result of the original excision operation, making complete suture impossible. Oil silk drains, removed on the second day after suture, were used in wounds appearing a little moister than desirable or showing a tendency to bleed as the result of manipulation. In amputation stumps drainage was the rule by means of rubber tubes.

Gauze soaked in flavine was used as the surface dressing. In all cases great care was taken to see that the wound should be properly immobilised (splinting, extension, &c.), at least until the stitches were removed and even after that. The stitches were, as a rule, removed on the eighth day and the patient kept in hospital until the twelfth day. It has been possible to observe some wounds for a longer period. The results quoted relate only to the condition of the wound at the time of the discharge of the patient from this hospital. The results are thus open to criticism, for it is possible that the termination of the case may not have been so favourable as indicated; still, if they only serve to emphasise the desirability of adopting this method of treatment it is enough. It can be said that in all cases where a successful result has been recorded the wound showed no indication of breaking down.

With regard to the bacteriology a point of explanation is necessary. The cultures were made at the time the pack was removed, but in no case was the result of the investigation awaited, as the wounds were sutured immediately after the removal of the pack. This is important, as the results tend to show the advantage of taking the clinical appearance of the wound as the indication for its suture rather than to depend on bacteriological findings. It is one of the objects of this paper to show that a knowledge of the latter is not essential in order to get good, or one might even say the best, results.

II.

The results have been classified under the following headings: (1) Failures; (2) Successes; (3) Partial Successes.

It may be as well to state what is meant by these terms. As a *failure* is classed a case in which either suppuration occurred, necessitating the complete removal of all the stitches, or in which the wound completely opened up without suppuration, showing no sign of healing power, a result which occurred on more than one occasion.

As a *success* is classed a case in which the wound healed by primary union, without even stitch suppuration, and remained sound.

As a *partial success* a case in which any stitch suppuration occurred, or a part of the wound opened up with or without suppuration.

Amongst the 100 cases there were 15 failures, 59 complete successes, and 26 partial successes. The majority of the latter were completely healed before discharge from hospital.

This portion of the paper is necessarily statistical, but to exemplify the advantages of delayed primary suture many individual cases will be quoted.

1. *Failures.*

Wounds of	(1) Skin only	3
,,	(2) Skin and muscles: (*a*) penetrating	6
	(*b*) gutter	1
	(3) Compound fractures, deeply placed	3
	(4) Compound fractures in subcutaneous positions	2
		15

Cause of Failure: (1) *Skin Only.*

Packs used: Two flavine, one bipp. One case, Scarpa's triangle (1) (F), ended in profuse suppuration, so that wound opened up and healed by granulation. Femoral vessel successfully closed over.

[1] A paper read before the Boulogne Medical Society on April 28th, 1918.

Two cases, one of buttock (2) (B) and the other of chest (3) (F). Both healed up until stitches were removed, when, without suppuration, they completely burst open, in the former case probably due to improper immobilisation. Average time of suture after packing, three days (2, 3, 5).

Bacteriology.—Streptococci grown from first case; nothing from 3; 2 not cultivated.

(1) 12 in.; (2) 7 in.; (3) small. Figures refer to the size of the wounds; letters to type of pack used.

(2) *Skin and Muscle* (7 cases).

In 6 of these the wounds had penetrated deeply into the muscles, and 1 was of the gutter type.

Packs used: Three treated by bipp, 2 by flavine.

(*a*) *Penetrating wounds* into (1) sterno-mastoid (B); (2) glutei (F); (3) glutei (F); (4) sartorius (F); (5) rectus femoris (B); (6) back muscles (B).

(1) 10 in.; (2) —; (3) 3 in.; (4) 4½ in.; (5) 2 in.; (6) 7 in. Figures refer to the size of the wound.

In 1, 2, 4, 5, and 6 the cause of failure was profuse suppuration necessitating the removal of all stitches and carrying out of various forms of treatment to obtain healing by granulation. Average time of packing four days (3, 6, 2 5, 4).

Bacteriology.—Only made in (6) = *St. py. au.*

No treatment to deep tissues after removal of the pack except in (2) which was washed with H_2O_2 and saline. In four cases deep catgut stitches were used. In all cases the suppuration came from the depths of the wound. In one case the wound healed; there was no deep treatment of wound or deep stitches applied; suppuration did not occur, but wound burst open completely after removal of stitches, probably due to lack of immobilisation.

(*b*) *Gutter* (7) wound into infraspinatus (F). No treatment to depths of wound. No deep stitches. No suppuration, but wound healed up, and two days after removal of stitches opened up completely. Wound 7 in. in length.

(3) *Compound Fractures—Deeply Placed* (3 cases).

1. *Compound fracture of femur* (lower third). Two wounds, one on inner side, other on outer side each 12 in. long. Excision of skin and muscles, bone exposed; all clean after removal of (F) pack. Washed in flavine. Muscles and skin completely sewn except for drain in dependent position. Treated by Sinclair method. Subsequently suppuration occurred, necessitating the removal of all stitches, and later suppuration of knee-joint with septicæmia, resulting in amputation of leg. No culture at first stage, but streptococci, *St. py. au.* and *B. pyocyaneus* were grown from pus, probably from bone ends. The condition of the wound after removal of the pack suggested the ideal clinical appearance for a successful result.

2. *Compound fracture of ulna* (upper third). Large wounds of entrance and exit, each 4 in. Great excision of skin in anterior wound. Clean on removal of (F) pack. Complete suture over fracture. Profuse suppuration requiring complete removal of stitches. Films nil. Culture *Strepto. pyog.*

3. *Compound fracture of ilium.* Large gunshot wound of buttock, 8 in., including excision of glutei. Posterior surface of ilium fractured. (F) pack removed; half wound clean and half dirty. Clean half closed after treatment with H_2O_2 and saline, and flavine pack to dirty half. Clean portion, suture complete; failure owing to profuse suppuration. *Staphylococci, B. coli* and *B. pyocyaneus* grown.

Two of the fractures were deeply placed and one superficially. In two the wounds were quite clean. All contained pathogenic micro-organisms. Micro-organisms probably were derived from fractured ends of bone.

(4) *Compound Fractures in Subcutaneous Positions.*

Two cases in region of carpus, with fractured metacarpal bones. Both (F) pack. Both washed with antiseptics—(1) with $HgCl_2$; (2) with flavine. Both completely sutured. Both suppurated profusely. One grew streptococci; the other *St. py. au.*

From these failures it is seen that the presence of bacteria in the wounds played a prominent part. In 7 out of 15 cases their presence was demonstrated. In 5 cases no cultures were made. In the other 3 no bacteria were present on cultivation.

With one exception the clinical appearance of the wound warranted suture, but it is admitted that it is extremely difficult to gauge from the clinical appearance of the wound the condition of the fractured ends of the bones, especially as it is known that bacteria penetrate for some distance up the cancelli from the site of the fracture.

It is interesting to note that in the three cases from which bacteria were not grown the wounds did not suppurate, but opened up after removal of the stitches, due to lack of healing power. Two flavine packs, one bipp pack. The same occurred in one of those in which no cultures were made.

2. *Complete Successes.*

By that meaning healing by primary union, without any suppuration of stitches, or even signs of inflammation.

Wounds of	(1) Skin only		15
,,	(2) Skin and muscle:	(*a*) penetrating	16
		(*b*) perforating	9
		(*c*) gutter	8
	(3) Compound fractures, deeply placed		9
	(4) Compound fractures in subcutaneous positions		2
			59

(1) *Skin Only* (15 cases).

Three treated by bipp, nine by flavine, two by plain gauze packs, one by Carrel's method.

The wounds were of all shapes—straight, oval, circular. Two of the wounds were amputation stumps, one of the thigh and the other of the leg. Of the remainder, the following were the size and the sites of the wounds:—

	Inches.		Inches.
Foot	2	Forearm	1, 3, 4
Leg	6, 2	Arm	2, 3, 5, 6
Thigh	4, 2	Chest wall	1

The average date of suture after excision of the wound was four days and varying from two to five days.

In 14 of the cases no antiseptic was applied to the wound; in one case it was washed with picric acid.

Skin in all treated with picric acid. Sutured with silkworm-gut. Complete suture in all.

No cultivations were made in eight cases. No growth obtained in cultivation of six cases. In one an anaerobic bacillus was grown, probably non-pathogenic.

(2) *Skin and Muscles* (33 cases).

Wounds of all varieties—following the removal of foreign bodies, clothing, and excisions.

Nineteen treated by flavine pack, 12 by bipp pack, one by ether pack, one by Carrel's treatment.

All shapes—straight, oval, circular; one wound was an amputation stump, with large portion of muscle in flaps.

The injuries to muscles were various—penetrating, perforating, and gutter wounds.

The various sizes and sites of wounds were as follows: the size of the muscle injury roughly corresponds to the size of the skin incision: in the majority of cases large portions of muscles were excised.

Penetrating Wounds.	Inches.		Inches.
Arm	2, 2, and 3	Thigh	4, 4, 4
Forearm	1½, 1½, 3	Forearm	3
Calf	2	*Gutter Wounds.*	
Back	4	Thigh	9, 8, 12
Thigh	1, 2, 6, 8 (ampt.), 4, 12, 2, 3	Buttock	5, 6
Perforating Wounds.		Forearm	4
Calf	2½, 3, 3	Scapula	12
Arm	2, 4	Calf	12

The average date of suture after packing of wound was 3½ days. (One case, 1 day; 9 cases, 2 days; 11 cases, 3 days; 3 cases, 4 days; 2 cases, 6 days; 1 case, 7 days; 1 case, 13 days.) The last case was an injury to knee-joint from which a foreign body had been removed through a fresh incision, which healed by primary suture. The entrance wound had been excised and kept packed until suture.

Treatment of wounds.—In all cases the skin was treated with picric acid. In 19 cases the muscles were untouched. In two cases of penetrating wounds the cavity was cleaned out with saline irrigation and six cases with flavine swabs. In perforating wounds, one washed out with saline to remove old blood clot and one cleaned with flavine swab. Three gutter wounds were cleaned with flavine swabs.

Sutures.—In all cases the skin was sutured with silkworm gut. In 14 cases deep sutures were applied to the muscles and fascia covering them in some instances owing to the large size of the gaps in the muscles, with the main object of preventing the formation of dead spaces; catgut was used in 13 of these and thread in one. The skin was completely sutured in 28 cases; oil-silk drains were left in for two days in three cases, and partial suture only was possible in one case. All the wounds healed by primary union.

Bacteriology.—In 24 cases film preparations and cultures were made. In 18 cases no bacteria were found; in three cases *St. py. au.* were grown; in two cases were *St. py. alb.* (negligible), and in one case anaerobic bacilli.

(3) *Compound Fractures—Deeply Placed* (9 cases).

Six cases of compound fracture of the upper end of the humerus, all comminuted, one partial, the others complete. One case, complete comminuted fracture of upper third of radius. One case, complete fracture of rib, with 2 in. exposed bone in wound. One case of fractured laminæ of last dorsal vertebra with complete division of spinal cord.

All except the fractured radius, which was treated with bipp, had been treated with flavine packs.

1. Compound fracture of humerus. 3-in. wound through outer part of deltoid. Bullet had been removed from axilla and wound closed satisfactorily by primary suture. The humerus had a small portion of the neck carried away; about 1½ in. of the bone could be felt bare.

2. Compound fracture of humerus. 4-in. wound through outer part of deltoid, with complete comminuted fracture of humerus.

3. Compound fracture of humerus—surgical neck; comminution considerable; no bone fragments loose; several attached by periosteum. Entrance over deltoid large, exit in axilla small. The entrance completely sutured, including muscle; exit drained; there was closing by granulation on discharge; under observation for three weeks.

4. Compound fracture of humerus; upper third; comminution considerable. Large entrance and exit from inner to outer side of arm, both completely sutured, including muscles.

5. Compound fracture of humerus; upper third; comminution slight. Small entrance in front, exit large behind. Exit wound completely sutured, entrance did not require suture.

6. Compound fracture of humerus, practically a transverse fracture with little comminution. Exit and entry upper third of arm, each 4 in. long, completely sutured, including muscles.

7. Compound fracture of radius. Large wounds of entry and exit with compound fracture of upper third of radius.

8. Compound fracture of rib. 14 in. wound, with complete fracture of rib. Two inches of the rib were laid bare and exposed in the wound.

9. Compound fracture of spinal laminæ—last dorsal vertebra. The patient had multiple other wounds necessitating lying on his back, if possible. He had complete division of spinal cord and C.S.F. was running out of the wound.

Average date of suture.—2½ days (2 to 4 days).

Treatment of wounds.—In the case of incomplete humeral, vertebral, and radial fractures no antiseptic applied to deep tissues. The complete humeral fractures were irrigated with saline and the rib with flavine.

Sutures.—In the cases of the humeral, vertebral, and rib fractures the muscles were closely sutured with catgut. No sutures were applied to the deep tissues in the other two cases. The skin was completely sutured in all cases, oil-silk drains being left in for two days in the vertebral and radial fractures.

Bacteriology.—No bacteria isolated in any of the cases except the spine injury, from which gas-forming anaerobic bacilli were grown. No cultivations in four of the cases of fracture of humerus.

(4) *Compound Fractures in Subcutaneous Positions* (2 cases).

Both cases were compound fractures of the first metacarpal bones, in

one case involving the metacarpo-carpal joint. Both had been treated with flavine pack and were sutured on the fourth day. No local antiseptic treatment applied to either wound except picric acid to the skin.

Both had skin completely sutured, 1½ in. in each case, and healed by first intention. No cultivations made from wounds.

It was possible to keep all these cases until healing of the superficial wounds was sound; they were thus evacuated as cases of simple fracture.

3. *Partial Successes* (26 cases).

Wounds of (1) Skin only			7
,, (2) Skin and muscle:	(*a*) penetrating		4
	(*b*) perforating...		1
	(*c*) gutter		4
(3) Compound fractures, deeply placed			1
(4) Compound fractures in superficial situations			4
(5) Joints			2
(6) Amputations			3
			26

(1) *Skin Only* (7 cases).

One treated by bipp, four by flavine, one by eusol pack, one plain gauze.

Site and size of wounds:

Calf, large.	Foot, 3 in.
Thigh, large.	Back, 12 in.
Buttock, 4 in., 5 in., 8 in.	

Average date of suture.—Two days in six cases; one sewn on the eleventh day.

Treatment.—Two treated by flavine. No local treatment in five cases. Skin washed in picric acid.

Sutures.—All cases completely sutured; oil-silk drains left in for two days in two cases.

Results.—In six of the cases mild stitch suppuration occurred, which completely cleared up before discharge from the hospital. In one of these a 5-in. wound of the buttock, 1½ in. of the wound opened up, but there was no suppuration under the skin.

In one case a 12-in. wound of the buttock, 8 in. remained healed; 4 in. in the centre broke open, without any suppuration at all.

Mild *stitch suppuration* was the only fault in five cases; one of these had been treated with flavine at the time of suture, three others had not.

In two cases the *wounds opened up*, one treated with flavine, the other not; the former did not suppurate, the other had stitch suppuration.

(2) *Skin and Muscle* (9 cases).

Seven treated by flavine, one by gauze, and one by bipp pack.

Size and Site of Wounds.

Penetrating.	Inches.	*Perforating.*	Inches.
Popliteal space...	2	Thigh	8 (exit & entry)
Calf	10	*Gutter.*	
Thigh	3, 6	Buttock	12, 10, 3
		Popliteal space...	10

Average date of suture.—Five days (3, 8, 9, 5, 5, 4, 2, 2), one of 17 days. The latter case was a man who had a severe abdominal wound which would not permit of earlier wound suture of buttock.

Treatment of wounds.—All skin treated with picric acid. Depths of wounds treated with flavine in five cases; bipp in one case, and no treatment in three cases.

Sutures.—Deep sutures of catgut in one case only. Complete sutures in eight wounds; in four cases oil-silk drains for two days. Partial suture in one case, owing to lack of skin to close the wound.

Results.—All wounds healed, including the partial suture; the remaining portion of the partially sutured wound remained clean and healed by granulation. Stitch suppuration was the only fault. In one wound (a 12-in. wound of the buttock) 1 in. close to the anus broke down and suppurated. No stitch suppuration in the rest of the wound.

Bacteriology.—Three cases cultivated. No growth obtained.

(3) *Compound Fractures—Deeply Placed* (1 case).

Scapula.—Large oval gutter wound over scapula 8 in. × 4 in., with fracture of spine of scapula. Treated with flavine pack. Wound sutured two days after packing, without application of antiseptic to wound. Skin completely sutured with oil-silk drain down to the fracture. Wound healed soundly, but a sinus subsequently formed down to the fracture.

(4) *Compound Fractures in Subcutaneous Positions* (4 cases).

(1) *Tibia.*—Wound excised with a large hole scooped out of the tibia into medulla at lower end. Wound, with exception of hole in bone, treated with flavine pack. On removal of pack four days later the hole contained blood-clot, the remainder of the wound being clean. The blood-clot was allowed to remain in the bone, but no antiseptic applied to the rest of the wound, and the skin completely sutured. Slight stitch suppuration occurred, but on discharge from hospital 16 days' later the wound was soundly healed.

(2) *Tibia.*—Complete fracture of lower third of tibia. Treated by flavine pack. Washed with flavine and wound sutured by turning a flap of skin from back of leg over the site of the fracture, necessitated by loss of skin at this site, two days after packing. Anaerobes and cocci in wounds. Slight stitch suppuration. Soundly healed on twelfth day. Fracture treated as simple fracture.

(3) *Fibula.*—Great damage to muscles and skin of calf. Two wounds (exit and entry), each 9 in. long, on each side of calf, with fracture of fibula in middle third. Bipped. Wound completely closed over fibula, muscle with catgut and skin with silkworm-gut. Owing to loss of skin, impossible to close the other wound. Wound healed soundly.

(4) *Metacarpal bone.*—First metacarpal bone, involving metacarpo-carpal joint. Treated by flavine pack. Sutured five days later. Washed with flavine. Slight gaping of the upper end of a 2½-in. wound. No suppuration. No growth on cultivation.

(5) *Joint Cases* (2 cases: Knee and elbow).

(1) *Knee case.*—Excision of wound just above the patella, leaving a 3-in. incision in middle line, involving suberureus bursa. A large quantity of synovial fluid escaped on removal of flavine pack on the fifth day. A considerable effusion of fluid was squeezed out of the knee-joint, but no other local treatment was applied to the wound. The capsule and the muscles were sutured with catgut, and the skin completely closed with silkworm-gut. The skin wound suppurated profusely, so that it had to be opened up; the abscess was found to be entirely superficial to the muscles; the joint remained perfectly quiescent. *St. py. au.* grown from the pus.

(2) *Elbow case.*—Large wound of posterior aspect of joint, which was wide open, with excision of ends of bones, except radius. There was great loss of skin, but the patient had a useful forearm, and it was considered advisable to delay a possibly necessary amputation. The cavity had been packed with flavine for seven days. A large part of the wound remained enclosed by skin, which was the only tissue possible to sew over it, but it closed the joint easily. It remained sound up to the twelfth day, when patient was sent to England.

(6) *Amputation* (3 cases: Thigh, forearm, finger).

All treated with flavine packs.

The former had suppuration amongst adductors (slight) at time of suture, and the dressing of the stump caused great pain. The second had great pain in stump. The third had head of metacarpal bone exposed with a large wound of the dorsum of the hand.

All were washed with antiseptics before suture. The two former were drained by tubes through the corners of the flap, and the latter was completely sewn up on the eighth, fifth, and fourth days respectively. The tube of the first went into the abscess cavity amongst the adductors.

Considerable stitch suppuration and deep suppuration occurred in the two former and slight stitch suppuration only in the latter, but the flaps held and the wounds eventually healed on discharge.

III.

In discussing these results as a whole it will be well to take them under the headings already indicated.

(1) *Sutures of Skin Wounds.*

There have been 25 cases in which the excised wounds included the skin only.

Fifteen of these were treated with flavine packs, five with bipp packs, one by Carrel's treatment, one with eusol pack, and two with plain gauze.

Of the 24 cases, three were complete failures; one of these due to infection of the wound resulting in suppuration, and in the others the wound broke open after removal of stitches. In the latter there is no indication as to the cause of the failure except the effect of the drugs (one flavine and one bipp) on the tissues retarding healing properties, or possibly improper immobilisation of the limbs involved.

Complete success occurred in 60 per cent. of the cases; partial success in 23 per cent.; 12 per cent. of failures. In other words the results were almost completely successful. It does not appear to matter what preliminary treatment has been used, neither does the application of antiseptic to the wound after the removal of the pack require special attention.

(2) *Suture of Skin and Muscle Wounds.*

Forty-nine cases treated of penetrating, perforating, and gutter types. The type of wound shows no contra-indication to suture, but the penetrating wounds have yielded more failures than either of the other two; there were six failures of this type and one of the gutter type. Suppuration in the wound, necessitating removal of the stitches was the cause of the failure. In six out of the seven cases of failure the *St. py. au.* was grown in one case only, the others giving negative results. It thus does not appear possible to rely on the bacteriological examination as an indicator of the desirability or not of suturing a wound. Amongst the failures there is no indication as to whether it is better to use bipp or flavine as the preliminary mode of packing. Complete union occurred in 66 per cent., partial union in 18 per cent., and failure in 16 per cent. The local application of antiseptics to the wounds was used in only a few cases, but in many cases of primary union to which it was not applied good results followed; in fact, in the great majority of cases no local applications were used.

The use of deep sutures to obliterate dead spaces is indicated. The use of oil-silk drains in suspicious cases seems desirable. The presence of bacteria in the wounds does not necessarily contra-indicate the application of sutures, for in three cases of primary union by first intention the *St. py. au.* was grown and in one an anaerobic bacillus.

The breaking down of the wounds without suppuration either completely or partially occurred in this group also.

(3) *Compound Fractures—Deeply Placed.*

Thirteen cases were treated with three failures.

Among the failures bacteria were isolated in each case. In those that healed the results were excellent. Unfortunately no bacteriology was instituted in any of the cases.

Local applications of antiseptics after removal of the pack were not used to three of the completely successful unions.

(4) *Compound Fractures in Subcutaneous Positions.*

Eight cases with two failures. Bacteria were grown in the case of each of the failures and no growth in any of the successes.

From these results there is nothing to indicate that any one form of packing is better than another. Flavine has been used in 18 cases of partial success, 33 cases of complete success, and 7 cases of failure.

Bipp has been used in 3 cases of partial success, 14 cases of complete success, and 4 cases of failure.

Plain gauze has been used in 1 case of failure, 3 cases of partial success, and 3 cases of complete success.

In the remainder Carrel, ether packs, &c., have been used.

A wound can be sutured at various stages after its infliction. Looking backwards at the various methods of dealing with wounds since the beginning of the war, it will be observed that the methods have gradually improved, both in the direction of limiting the duration of the convalescence of the patient and in obtaining scars which are less likely to

leave crippling results. Sepsis has played the chief rôle in this drama. At first all our attention was paid to dealing with the infection without regard to anything else; then came the initial great step towards improving our methods—namely, the wholesale excision of damaged tissues which simultaneously limited the degree of infection of the wounds or the areas of freshly cut tissues left as the result of the excision. Such wounds were allowed to heal by granulation, a process which often took weeks or months, varying with the size of the wound, in its completion. Some of us, although this was by no means universally carried out, sutured or re-excised these granulating areas so soon as we were satisfied that the degree of infection was so slight as to permit of healing taking place; this was the first attempt to shorten the convalescence and avoid deep scar formation and deformity, but it was then often too late and did not give the best results.

More recently the surgeons at the C.C.S., who had become extremely expert in carrying out radical excisions of the wounds, have come to perform primary suture of the tissues after the damaged portions have been removed. It is obvious that after the performance of such an operation the cases should be kept under the direct observation of the surgeon during the period of healing. This cannot always be done owing to pressure of work. Also it is not always advisable to carry out primary suture owing to the difficulty of being quite sure that all the damaged tissues have been excised, especially in large wounds involving considerable areas of muscle. There may be no clinical evidence at the time that the excision is performed to indicate that damaged tissue has been left behind. Granted that the excision has not been complete, such evidence will be apparent in a couple of days. It was the recognition of this fact which led to the method under discussion—namely, "delayed primary suture." Primary suture is undoubtedly the ideal mode of dealing with an excised wound, but it is my belief, from the facts above stated, that when such is not possible delayed primary suture should be the object in view when dealing with wounds.

In order to obtain the best results it is obvious that adequate excision of the damaged tissues is essential; this is of primary importance, and unless it is carried out successfully the date of suture is necessarily delayed.

The application of drugs to the raw surface has as its object the sterilisation of any unexcised infected tissues which may have been left behind. It is difficult to believe that this is what really happens except in the case of the very superficial wounds, for where large areas of muscle have been excised it is quite impossible to be certain that the drug gets into all the small pockets lying in the intermuscular and intramuscular planes. It is my belief that when the wound remains clean and is suitable for suture it is due to the fact that all the infected tissue has been successfully excised, and that the drug plays but a small part in the process of cleansing, and then only to the surface tissues with which it comes in direct contact. This argument indicates the desirability of the wide excision of damaged tissues, with as little detriment as possible to the future function of the part of the body involved. There is no indication from my series of cases that any one drug is better than another. They have all been applied in the form of packs, flavine, bipp, ether, eusol, and so forth.

Wounds that have been treated by this method, adequate excision of damaged tissues, followed by drug packs, require a certain amount of selection in carrying out the method of delayed suture. The majority of the cases arrive as suitable, the tissues being clean and in the characteristic state above mentioned. Moisture is not a contra-indication to suture, but a wound in this condition requires special attention. Actual pus or the presence of unexcised infected or damaged tissues calls for further treatment before suture is performed. It is stated by some that the wound should be bacteriologically clean before the tissues are sutured. This is not my view of the matter. *It is the clinical appearance of the wound that should act as the indicator* if delayed primary suture is to take its proper place. In order to obtain a bacteriological knowledge of the wound it is necessary to remove the plug from the tissues and to wait for a certain period while investigations are carried out. Film examinations are not sufficient to define the presence or absence of bacteria. In many of my cases no bacteria were present in films, whereas they were present on cultivation. Moreover, in many cases where no bacteria were demonstrated in either film or culture preparations profuse suppuration occurred. There are two points against waiting for this examination. From experience it is shown that the best results have been obtained when the wound has been sutured directly the plug has been removed. Secondly, a clinically clean wound may also give negative bacteriological results and at the same time suppurate. If suppuration does occur it can always be dealt with. In the cases above mentioned the bacteriological investigations were carried out at the time of the suture, but the results were not obtained until after this operation had been performed. I am indebted to my colleague, Captain S. Wyard, R.A.M.C.T., for these investigations, which he so kindly and carefully carried out for me.

Technique of Delayed Primary Suture.

Indications.—All wounds in which complete excision of damaged tissues has been performed, to which drug packs have been applied and which on the removal of the pack show a dry or slightly moist surface, which do not contain pockets of pus or unexcised damaged tissues, are suitable.

Date of suture.—The suture should be carried out from the second to fourth day. The earlier date is the best. In most of the above cases the average date was the third day, due, as a rule, to the time necessary for the transference of the cases from the C.C.S. to the base; even a longer period has elapsed since the excision was performed and still successful or partially successful results obtained; there is good evidence to show that the longer the pack is left in the less likely is a completely successful result to be obtained.

Local treatment of the wound.—The pack should be removed with extreme care so as to avoid bleeding. The pack tends to stick to the walls of the wound. Blood left in the wound is a possible factor in aiding the growth of lurking bacteria and thus producing suppuration. After the removal of the pack the question arises as to whether or not antiseptics should be applied to the tissues; in 15 out of 26 partially successful results, in 16 out of 59 completely successful results, and in 6 out of 15 cases of failure, antiseptics were used. The cases of failure can be excluded, for they were all undoubtedly infected, but if figures are of any value at all they would seem to indicate that the use of antiseptics is not desirable. It is my belief that the condition of the wound alone should indicate their use. A dry clean wound should be left alone and not touched. A moist wound is one which is more likely to be, or to become, infected than a dry one, and it is to wounds of this type that antiseptics should be applied; as more of the latter occurred among the partially successful results their larger use among these cases is accounted for. It is obviously desirable to wash out old or fresh blood from the wound.

With regard to the skin, great care should be taken in thoroughly cleansing it, removing dried blood and dirt first with ether followed by some antiseptic. In this series picric acid (2 per cent. alcoholic solution) was used and found to be quite satisfactory.

Sutures.—In the case of deep wounds into muscle the question of obliterating dead spaces or uniting divided muscles arises. In many wounds the tissues tend to fall together naturally and then the introduction of foreign material is avoided; but if a dead space is likely to form this should be obliterated. Catgut or thread have both been used. If it is possible to draw the muscle sheath or fascia over the excised muscle this is advisable so as to avoid hernia formation.

In the case of fractures, as many tissues as possible should be sewn over the approximated ends of the bone, greater care than usual being exercised to obliterate dead spaces.

Silkworm gut has been used throughout for the suture of the skin; owing to tension resulting from excessive excision of the skin, either flap operations or tension sutures with buttons can and have been used. It was largely due to tension that many of the cases of stitch suppuration occurred.

The skin stitches should be removed on the eighth day as a rule, but in some instances they should be left for a longer period because the wounds may suffer from delayed healing powers and burst open at a later date without suppuration occurring.

Absolute immobilisation of the part of the body in which the wound is situated is of primary importance; splinting, extension, plaster-of-Paris, should all be used to their best advantage. In no case, however trivial the wound may be, should this step be omitted. This is especially important in such situations as the buttock and over the shoulder.

Advantages of the Method.

1. By a long experience there is no doubt in my mind that many of the wounds which healed in 10 days would have taken many months to do so had they been allowed to granulate in the usual way. A quite trivial wound often takes weeks, yet without exception, where successful results were obtained, the period of healing was 10 days. As 85 per cent. of the cases were successful in their results, the advantage to the nation as well as to the patient is obvious.

2. Even if the result is not completely successful, partial success may accrue, and, besides limiting the period of convalescence, will also lessen the pain suffered by the patient while he is being dressed, and will also diminish the area from which absorption can take place.

3. Large deep scar-formations are avoided or limited, thus preventing the subsequent formation of deformities following contractures.

4. In the case of fractures the advantage of a successful result is manifest. The conversion of a compound into a simple fracture avoids that long period of illness following osteomyelitis, often suppurative arthritis and possible amputation, sequelæ which so often occur.

5. When large vessels are exposed in either subcutaneous or deep positions the desirability of covering them over is obvious.

6. Great advantage in wounds of skin over bones in subcutaneous situations—e.g., tibia, ulna, &c.

7. Avoids painful dressings even if only partial suture performed or partial success only obtained.

8. Even if the wound does suppurate it can always be opened up, the patient being in no worse a position than he was before. The method is nearly always possible in which adequate initial operative measures have been carried out, with a strong probability of success. Any method which limits the duration of the period of healing, especially at a time like this, is worthy of consideration, and this is one of them.

TRAUMATIC ANEURYSM OF THE SECOND PORTION OF THE SUBCLAVIAN ARTERY: OPERATION.

BY A. H. TUBBY, C.B., C.M.G., M.S. LOND., F.R.C.S. ENG.,
TEMP. COLONEL, A.M.S.; CONSULTING SURGEON, E.E.F.;
AND
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ALTHOUGH it may be undesirable to occupy the pages of THE LANCET with the details and deductions from a single case, yet accounts of operations for traumatic aneurysm of the second part of the subclavian are sufficiently infrequent to excuse us traversing an otherwise useful procedure. And the more so because of the insignificance and almost microscopic size of the fragment which was here indirectly the cause of loss of life; because of the difficulties in determining before and during operation the identity of the vessel affected; and because this case presented so many of the "classical" dangers which surround an operation on an injured vessel in this region. Briefly, the account of the case is as follows:—

Pte. G. B., wounded just below middle of right clavicle on Nov. 2nd, 1917, by tiny fragment of shell. Immediately some numbness in arm; lower part of neck slightly swollen. The swelling, however, lessened gradually for a few days, but some little difficulty in swallowing and speaking ensued. An X ray examination showed a minute fragment of metal situated immediately behind clavicle and moving with respiration. The wound healed and he was transferred to a convalescent hospital. When he had been there for two days, patient drew attention to increase of swelling at lower part of right side of neck; he was referred to the General Hospital from which he had come.

The swelling continued to increase in size, and he was seen by us in consultation on Nov. 26th, as enlargement was rapid and there was free pulsation. The tumour now presented all the signs and symptoms of an aneurysm. It rose, sessile, from behind inner and middle thirds of clavicle, was of size of turkey's egg, and extended upwards into superior carotid triangle to level of fifth cervical vertebra. Bulk of swelling not in line of carotid artery, but above arch of subclavian vessels. Taking into consideration the X ray findings the limits and demarcations of tumour, the history of slight numbness of right arm, and the fact that right radial pulse was weaker than left, the opinion was expressed that the aneurysm originated, most probably, from first or second part of subclavian, less so from supra-scapular, and remotely so from vertebral artery. Aneurysm of carotid or innominate artery was ruled out chiefly by the fact that the swelling was not sufficiently near mid-line of neck.

In two days' time the tumour had increased in size by one half, and it was evident that whatever the outcome of an operation it must be done at once. It was recognised that it would be a formidable undertaking; it would involve imminent danger to life and necessitate careful planning and free incisions. Before operation it was decided to turn back a large triangular flap of superficial tissues, with its apex at sterno-clavicular joint; to cut across sterno-mastoid, to identify the carotid artery and internal jugular vein, and to divide clavicle. As the swelling was of some duration and as it had increased rapidly, the risks arising from partially obstructed or dilated veins, from wounding the pleura, and from adhesion of and injury to the phrenic nerve and brachial plexus were apparent, and all these risks were encountered.

The operation was performed on Nov. 29th, on the lines previously indicated.

After division of sterno-mastoid muscle a very voluminous internal jugular vein was seen to obscure completely common carotid artery. This vein was traced down to its juncture to subclavian vein, and both these structures were found adherent to the false sac and required to be dissected from it. In doing so a puncture was made just at the juncture of these large veins, and a whistling sound was the sign of entrance of air into the veins; this caused temporary embarrassment to patient, but we were able to secure small aperture into veins and put, as it were, a lateral ligature upon the opening.

The upper two-thirds of the aneurysmal swelling were now in view, but the sac was not quite clear of superficial structures. A thin layer of muscle was seen lying over it, and coursing through the muscle-fibres a nerve was noted. These structures were identified as the scalenus anticus and phrenic nerve. They were dissected off the sac and retracted outwards, and its upper limit was seen to be on the level of the fifth cervical vertebra; it terminated there in a jointed pedicle just over the fifth cervical transverse process, which made us hazard the suggestion that we were possibly dealing with an aneurysm of the vertebral artery. So we ligatured the upper end of the aneurysm. On its outer and lower side a large matted band was dissected away, which was the cords of the brachial plexus compressed and adherent amongst themselves. At upper and outer part of sac the plexus cords were spread and frayed out over it. In effect, there was intimate adhesion of the sac to all adjacent important structures. As we had not yet defined the origin of the aneurysm, the clavicle was now divided at its mid-part and its inner half turned inwards. Even now there was scarcely room for manipulation, and we should have, if condition of patient permitted it, removed half of first portion of sternum. But the operation had already proved a long one, and his heart was not of the most healthy.

In clearing away the structures on the outer side the sac gave way and a formidable gush of blood followed. This was controlled by pressure of a finger pushed deeply behind first costo-sternal junction and pressing proximal portion of artery against bone. Whether we were compressing innominate or first part of subclavian was immaterial, the flow was lessened, and was quickly stopped. We were now working at the bottom of a deep pit, and a first attempt to place a ligature on proximal part of artery failed to arrest pulsation, but a second proved adequate. Another ligature was put round the subclavian artery on distal side of aneurysm. No attempt was made to discover the fragment of metal which had caused all this trouble. The portions of clavicle were replaced, parts of sterno-mastoid and omo-hyoid united, and wound closed. The operation, an exceedingly difficult one, had lasted 2½ hours, and patient was in a very exhausted state. He died at 4.30 P.M. the same day without having recovered consciousness.

At the post-mortem made by Captain J. G. Thomson, R.A.M.C., there was found extensive fatty degeneration of heart and massive collapse of right lung, and right pneumothorax due to a puncture of apex of pleural sac.

The subjoined diagram shows the outline of the aneurysm during life and the traumatic lesion of second part of subclavian, together with position of ligatures.

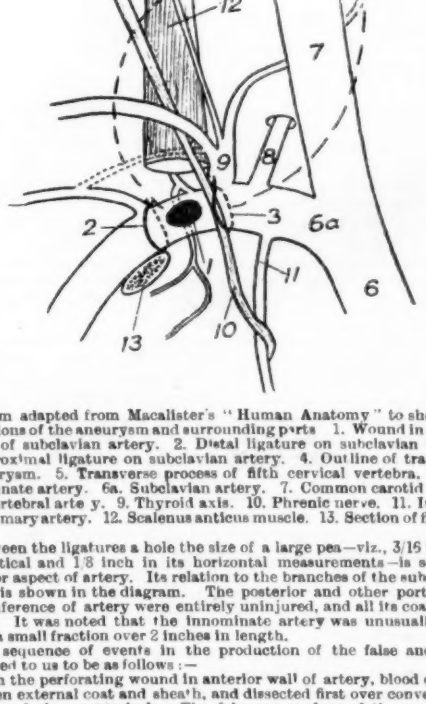


Diagram adapted from Macalister's "Human Anatomy" to show the relations of the aneurysm and surrounding parts. 1. Wound in second part of subclavian artery. 2. Distal ligature on subclavian artery. 3. Proximal ligature on subclavian artery. 4. Outline of traumatic aneurysm. 5. Transverse process of fifth cervical vertebra. 6. Innominate artery. 6a. Subclavian artery. 7. Common carotid artery. 8. Vertebral artery. 9. Thyroid axis. 10. Phrenic nerve. 11. Internal mammary artery. 12. Scalenus anticus muscle. 13. Section of first rib.

Between the ligatures a hole the size of a large pea—viz., 3/16 inch in its vertical and 1/8 inch in its horizontal measurements—is seen on anterior aspect of artery. Its relation to the branches of the subclavian artery is shown in the diagram. The posterior and other portions of circumference of artery were entirely uninjured, and all its coats were intact. It was noted that the innominate artery was unusually long, being a small fraction over 2 inches in length.

The sequence of events in the production of the false aneurysm appeared to us to be as follows:—

From the perforating wound in anterior wall of artery, blood escaped between external coat and sheath, and dissected first over convexity of vessel and then posteriorly. The false sac so formed then extended rapidly upwards to transverse process of fifth cervical vertebra and laterally, especially internally, thus masking the carotid artery and exercising pressure in all adjacent structures with intimate adhesion to them. The vertebral vessels lay behind the sac and were uninjured.

Reviewing the conditions of this case it is difficult to see what other course could have been adopted, and what steps taken to avert the fatal event, save that a more expeditious operation, if that had been consistent with success, might have inclined the scale in the patient's favour.

CEREBRAL GALVANISM:

TREATMENT OF CHILDREN MENTALLY BACKWARD AS A RESULT OF PROLONGED ILLNESS.

BY FRANCIS HERNAMAN-JOHNSON, M.D. ABERD.,
HONORARY CAPTAIN, R.A.M.C.; LATE CONSULTING RADIOLOGIST, ALDERSHOT COMMAND.

IN the last days of July, 1914, a large gathering of medical men from various parts of the world met at Aberdeen under the auspices of the British Medical Association. There was still but little thought of war in their minds, although the German delegates had not turned up. French representatives were there, and among them Professor Stephane Leduc, of Nantes. This distinguished *savant* read a paper on the use of cerebral galvanism, but the fact that he had scarcely time to finish his remarks before hurrying back to France brought home to those who heard him some idea of the imminence of a great conflict.

Application of the Method.

The present writer has always been glad that Professor Leduc had time to deliver his address. Owing to the general dislocation which so quickly followed, few of the papers were published *in extenso*, and so far at least as one man's practice is concerned, many gratifying successes might never have been attained.

Professor Leduc spoke of the use of continuous currents passed through the brain in certain forms of headache, in loss of memory after illness, and in paralysis of cerebral origin, whether the result of apoplexy or trauma.

Immediately on the outbreak of war the writer of this paper went to Aldershot to organise the X ray and electro-therapeutic work for the Cambridge Hospital and the establishments subordinate to it. The cases dealt with were, of course, chiefly military, but the Louise Margaret Hospital for Women and Children furnished a certain number of civilian type.

Cerebral galvanism was first tried in the type of case commonly known as "shell shock." As, however, the etiology of cases so diagnosed often differs widely, the results were not uniform.

Briefly, when the mental factor predominated, or when the patient came of neuropathic stock, little good resulted; but in cases where the condition was due to prolonged strain acting upon an organism originally healthy both in mind and body, improvement was the rule. Such cases were obviously tremulous and broken down in appearance. They complained of headaches, sleeplessness, lack of memory, and inability to concentrate. These symptoms were usually relieved as a result of 20–30 daily treatments and the patients restored to usefulness, at any rate, in a civilian sense.

Notes of Cases.

CASE 1.—A boy of 7 was brought by a soldier who had been symptomatically cured, with a request that I would give similar treatment, as the child was backward at school, suffered from headaches, and had "fits." This condition was said to be of 18 months' duration, and to date from a severe and prolonged attack of whooping-cough. It is always difficult to be sure what the laity mean by "fits," but in this case apparently the boy would throw himself on the floor, roll his eyes, and appear to be only semi-conscious for some minutes. From being a bright child, he was said to have become dull and apathetic. This latter he certainly looked, and his intelligence seemed much below that normal for his age.

I agreed to fall in with the father's suggestion, and the boy was given daily treatments for three weeks. An improvement was soon noted. He ceased to complain of his head. His appetite, which had been poor, became normal, and he became more intelligent in his answers to questions. When he had had about 20 treatments his father was transferred to another station. Three months later I heard that there had been no more "fits," and that the boy was doing well at school.

This case was encouraging, but it is, of course, open to criticism. The appearance of increased intelligence might have been due to the wearing off of shyness in my presence; and the subsequent improvement to change of air and scene.

The second case in which I tried cerebral galvanism is, I think, difficult to regard as a mere instance of *post hoc, non propter hoc*.

CASE 2.—The child, a girl of 12, had, at the age of 6, become infected with tapeworm. She had passed segments at intervals for over two years, but none had been seen since she was 9. During the infective period, however, she had developed numerous symptoms of reflex nervous irritation. These had culminated in what appear to have been epileptic seizures, for which the child had been treated in hospital for many months. She was the victim of obstinate constipation, of daily headaches, and, worst of all, her intelligence seemed that of a child of six, with the further handicap that all the lessons learned in the first year of school had been forgotten, and that she was unable to re-learn owing to the fact that any mental effort brought on severe headache.

The child, on being brought to see me, stared vacantly about, displaying neither interest nor alarm. She remained silent when I spoke to her, but occasionally answered her mother in monosyllables. She was of normal height, but nearly a stone below weight. Her tongue was furred, and her breath unpleasant, although her teeth were sound and well kept.

I decided to give cerebral galvanism to begin with, intending later to administer abdominal treatment for the constipation, and to have her eyes examined to discover if there was anything there to account for her headaches. Placed on the couch with the pads strapped to her forehead and the back of her neck, she showed no nervousness, but remained in the attitude in which she was placed like an automaton.

The story from now on is remarkable. Within a week she had lost her headache. This might have been reasonably hoped for if it was not due to eye-strain, but that the bowels should begin to act regularly every day without the use of any purgative, and without any change of diet or mode of life, was a result which I, for my part, had never expected. Coincidently with the improved bowel tone her appetite improved and her tongue cleaned.

To be brief, within six weeks—i.e., after the administration of some 30 treatments—the child was mentally and physically transformed. She astonished her mother by repeating verses which she had learned at school between five and six years previously, and asked again for her reading books. In another fortnight I had the pleasure of hearing her read very creditably out of the first school reader, and she could also do simple sums in addition and subtraction.

Treatment was then stopped, and she was sent to a special school for backward children, where she did well. I saw her again a month later, when she presented the appearance of a normal, healthy child, and was now almost the proper weight for her age.

Effect of Treatment.

If we are to allow for the sake of argument that the application of galvanism to the brain was the sole cause of this child's recovery, it would appear that the mischief reflexly produced by the irritation of the tapeworm must have fallen most heavily upon the cerebrum and upon the vital centres in the medulla. It does not, however, follow that this must always be the case, or that similar treatment, even admitting its efficacy in this and the other instance quoted, would always produce the same happy results.

It is far from my intention to vaunt cerebral galvanism as a specific for children mentally and physically stunted as a result of prolonged illness, or yet to belittle the value of existing methods of treating such cases. I have, however, no doubt in my own mind that the rapid improvement in the case last quoted was directly due to the treatment given. It should therefore be worth while to try this treatment in cases presenting similar features. Fortunately, where cerebral galvanism is going to do good some benefit is apparent within a fortnight, so that little can be lost by making the experiment.

It should be remembered that the cases in question are of a peculiarly hopeless and distressing nature. One definitely proven positive result is sufficient to counterbalance many negative ones, and if only one patient in twenty among those apparently suitable derive benefit the labour expended will be well repaid.

Technique.

The technique is simple and free from danger if conducted by skilled persons. It should not be carried out unless it can be directly supervised, and not merely prescribed by a medical man.

The continuous current from the main taken through a resistance should never be used for this purpose. A cell battery with a finely graduated resistance or a soundly constructed and truly earth-free "pantostat" or "multostat" must be employed.

One pad about 3 in. × 2 in. is bound to the forehead exactly in the centre. The other, a little larger, is placed on the back of the neck. The forehead pad is made positive, and a current of 1–3 ma. passed for 20 minutes.

The greatest care must be taken to see that the current passes in a strictly antero-posterior direction, and that it is evenly distributed throughout each hemisphere. On no account must a galvanic current be passed in a lateral direction through the brain for purposes of treatment.

In conclusion, I would emphasise the fact that, while the use of cerebral galvanism is in the experimental stage so far as children are concerned, it is, in general, a well-tried remedy, and has already given brilliant results not only in neurasthenia, but also in paralysis due to cerebral trauma, when this has not resulted in actual destruction of brain elements. Such injury is usually confined to one hemisphere, but the rule concerning longitudinal passage of current and even distribution to both sides of the brain must none the less be strictly adhered to.

Harley-street, W.

THE BATHS OF TORQUAY.—At the last meeting of the Torquay Town Council it was stated that the cost of the new medical and swimming baths was £19,638, being £4638 more than was originally estimated.

THE SELECTIVE TREATMENT OF PARALYSED MUSCLES.

BY W. J. TURRELL, M.A., M.D. OXON.,
MAJOR, R.A.M.C.(T.); ELECTRO-THERAPEUTIC PHYSICIAN, RADCLIFFE INFIRMARY, OXFORD.

THE simplest, and possibly the most effective, method of exciting contractions in muscles deprived of their motor nerve-supply is by means of the rhythmically interrupted galvanic current. A current rhythmically varied in intensity, or rhythmically interrupted, is far more readily tolerated than one in which the variations in strength or the interruptions are irregularly produced. In addition to being interrupted, the current should be reversed in direction at each interruption; by this means its ionic effect is much reduced, and consequently its irritating action on the skin.

Two objections have been raised to this form of treatment: (1) That the contractions produced are too jerky and abrupt, and do not possess the smoothness and evenness of a physiological contraction; (2) that over-action of the healthy antagonistic muscles is excited, especially when muscles in an advanced stage of degeneration are being treated.

Method of Retarded Excitation.

Both these objections can be overcome by the adoption of an ingenious method described by M. Louis Lapicque, the well-known French physiologist.[1]

In 1907-1908 Lapicque found, and the same conclusion was arrived at independently by Keith Lucas, that if the current of excitation was made progressively, instead of, as is usually the case, suddenly and abruptly, the loss in efficiency due to this retarded excitation was less in the case of paralysed muscles than in healthy ones.

For instance, if a muscle receives suddenly the minimum strength of current which is capable of exciting it to contract (the threshold of excitation) a contraction resulted; but if this current of threshold strength, or even a little above threshold strength, is made progressively, say in 6/1000 second, no contraction results in a healthy muscle. A normal muscle ordinarily contracts when excited by a current of short duration, about 1/1000 second (it has a short chronaxie). On the other hand, a paralysed muscle, requiring a current of longer duration to excite it (a long chronaxie), is not affected by the current reaching its constant intensity in a progressive manner. With a muscle in an advanced degree of degeneration the current may take 1/20 or 1/10 second to reach its constant intensity without losing its power of excitation.

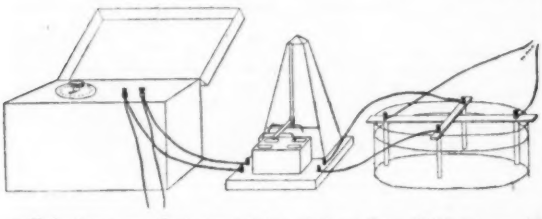
Lapicque has accomplished this retardation by the employment of condensers placed in parallel.

"A condenser of 2 micro-farads makes the current take about 6/1000 second to reach 95 per cent. of its constant intensity. By introducing progressively greater capacities, up to 10, 20, or 30 M.F., if the hypo-excitability of the paralysed muscle necessitates the employment of a more intense current, one arrives at completely suppressing the contraction of the healthy muscles without modifying in any degree the efficacy of the current on the paralysed muscle."[2]

At the make of the current the condensers in parallel have to become fully charged before the full current strength reaches the patient; at the break of contact the condenser discharges through the patient in the direction of the current of make, and so damps the current at break. To be fully effective it is necessary that the time of discharge of the condensers should exceed the chronaxie of the nerve of the healthy muscles, but should be less than the chronaxie of the paralysed muscles.

Description of Apparatus: Advantages of the Method.

Messrs. Schall have constructed for me a box containing 15 condensers of 2 micro-farads each, arranged in series, and fitted with a selector and studs as in the ordinary dry



cell battery, so that capacities of from 2 to 30 M.F. can be utilised as desired. This set has been used at the Radcliffe Infirmary, Oxford, for the treatment of nerve lesions in the patients of the 3rd Southern General Hospital. The arrangement of the apparatus is shown in the accompanying sketch. A water resistance is figured here; from this the wires lead to a reversing metronome and thence to the patient, with the condensers inserted in parallel between the metronome and the patient.

The advantage of using these condensers is very marked. The patients say that the treatment is more pleasant and "smoother" in its action; the sudden jerk of the muscles is obviated, a stronger current can be tolerated.

When using a strength of current necessary to excite contraction in muscles with very advanced degeneration the contraction in the healthy muscles, in my experience, is not entirely suppressed; but it becomes very slight, and in contrast the contraction of the paralysed muscles becomes more evident.

In the treatment of muscles in an advanced degree of degeneration it is not necessary to go to the expense of the selective wiring, as the full capacity of 30 M.F. is always used in such cases. In slighter degrees of degeneration the best results are obtained by suitably attuning the current strength and the condenser capacity. For instance, in the case of a regenerating median nerve I have observed the following phenomena.

With a strong current intensity the largest condenser in parallel did not damp down the contractions in the extensors sufficiently to prevent them overpowering the weak action of the flexors, and consequently the fingers were extended by the action of the current. By reducing the current intensity to the point at which it just produced a contraction of the flexor muscles, and then interposing a condenser of 14 M.F., the musculo-spiral group were not excited, and the movement of the fingers became one of flexion instead of one of extension.

In electro-diagnosis, in which this method is most useful in suppressing the overaction of the healthy antagonistic muscles, some method of varying the capacity of the condensers is required.

The only references to Lapicque's method of the selective treatment of paralysed muscles which I have been able to find are the two I have mentioned. The method does not as yet appear to have been much used in France; it is, however, certainly deserving of an extended trial, as both theoretically and practically it appears to remove the objections alleged against the use of the interrupted galvanic current in peripheral nerve lesions and in infantile paralysis.

[1] C. R. Académie des Sciences, Nov. 22nd, 1915.
[2] Les Blessures des Nerfs, J. Tinel, 1916, p. 60.

A NOTE ON
THE STERILISATION OF LOCAL ANÆSTHETICS.

BY M. MACNAUGHTON-JONES, M.B., CH.B. R.U.I.

I AM writing to suggest a simple but effective method of preparing a sterile solution of cocaine or other local anæsthetic which may also contain adrenalin chloride. It consists in preparing a solution of sodium chloride together with the anæsthetic or anæsthetics and adrenalin chloride, each constituent being present in such quantity that a dilution with many (e.g., 40) times the volume of water will give a solution containing the requisite percentage of each. The preparation is placed in a sealed phial or ampoule and kept until required. Sterile water is added immediately before injection. Experiments by Dr. John Matthews demonstrate that even if the preparation be inoculated with the ordinary forms of bacterial contamination the presence of concentrated salt renders it sterile in a few days.

Osmotic Pressure: Some Facts and Deductions.

The percentages of salt and anæsthetic are quite arbitrary, and it may not be out of place to review a few facts about osmotic pressure and deductions from them which are generally accepted. It will enable anyone desiring to adopt the method to have a solution prepared readily of any anæsthetic of any required strength and having a given osmotic pressure.

A 0·95 per cent. solution of sodium chloride is isotonic with mammalian serum and such a solution produces minimum injury to tissues, if these are immersed in it or permeated by it for a prolonged period. Any increase or decrease in the strength of the solution causes an osmotic flow out of or into the tissues.

The sodium chloride in an injection may be increased to 2·5 per cent. or reduced to 0·55 per cent. without producing material damage or irritation. It can be further increased to 5 per cent. with very little ill-effect, but a reduction from 0·55 per cent. to zero is attended by injury to the tissues rapidly increasing in degree as the strength is reduced. As reduction takes place a point is reached at which simple saline solution produces anæsthesia, but if reduced to such a point that it will even diminish sensibility the injection becomes both painful and injurious.

Infiltration of the tissues with pure cold distilled water is an effective method of producing local anæsthesia, but the injury to the tissue is such that necrosis may result. The lower the osmotic pressure, however, the more rapid and complete the effect of any given solution of an anæsthetic.

It is therefore desirable that the osmotic pressure should be reduced as far as possible without risk of producing irritation or such injury to the tissues that healing would be affected. In the examples which follow an osmotic pressure equal to that of a 0·4 per cent. (4 per 1000) solution of NaCl is adopted.

It is easier to prepare a dilution having an osmotic pressure comparable to a given solution of salt than one expressed in terms of atmospheric pressure or a column of mercury. It is only necessary to calculate the comparative pressure produced by the anæsthetic, and if this be 1/3, 1/4, or 1/5 that of sodium chloride, regard the solution as having 1/3, 1/4, or 1/5 the quantity of that salt present, and then add sufficient to make the equivalent of a 0·4 per cent. solution.

The osmotic pressure respectively produced by any two salts in solution is inversely proportionate to their molecular weights, which can be found in many books such as Martindale. Thus the molecular weight of cocaine is 5·75 times, and that of novocaine 4·63 times as much as that of NaCl. Therefore, disregarding error due to ionisation, the osmotic pressure exerted by a given quantity of sodium chloride in solution is equivalent to 5·75 times the quantity of cocaine hydrochloride, or 4·63 that of novocaine.

Let it be assumed that a solution is required containing 4·6 parts per 1000 of kerocaine,[1] and having an osmotic pressure equal to that of a 4 per 1000 solution of NaCl. A solution containing 4·6 parts per 1000 of kerocaine has an osmotic pressure equal to one containing 1 per 1000 of salt. It will therefore be necessary to add 3 parts per 1000 of the latter. Adrenalin chloride is added in such infinitesimal quantity that its osmotic influence may be disregarded.

Method of Preparing the Concentrated Solutions.

A simple method of preparing the concentrated solution is to take the quantities of anæsthetic, salt, &c., required per 1000 and dissolve in water, but make up to 25 instead of to 1000.

The concentrated solution I have prepared contains:—

Kerocaine	3·25	(13%)
NaCl	3·25	(13%)
Adrenalin chloride solution (1 in 1000)	8·0	(32%)
Water by weight (or metric)...	ad 25·0	(100)

This solution, prepared without antiseptic precautions and after contamination with *Bacillus coli* and other organisms, was sterile a week after preparation. When diluted with 40 times its bulk of water it contains 3·25 parts per 1000 of both kerocaine and sodium chloride, gives perfect anæsthesia, and has an osmotic pressure approximately equal to that of a 4 per 1000 (0·4 per cent.) solution of the latter salt. The adrenalin is not in sufficient strength to arrest hæmorrhage, but secures prolonged anæsthesia. A certain amount of hæmorrhage during the majority of operations is easily controlled and, in my opinion, is preferable to the risk of a subsequent hæmatoma, which I have seen develop on more than one occasion.

If a 2 in 1000 (0·2 per cent.) solution of cocaine be desired the formula would be modified as follows:—

The osmotic pressure of such a solution is only equal to that of a 0·35–1000 NaCl, and consequently about 3·65–1000 of this salt is added; but, inasmuch as cocaine produces anæmia, the adrenalin may be reduced if desired.

The concentrated solution would be:—

Cocaine hyd.	2	(8%)
Sodium chloride (approx.)...	3·75	(15%)
Adrenalin chloride (1 in 1000)	6	(24%)
Water by weight to	25	(100)

It is suggested that a solution be prepared 40 times the strength of that required for injection, because increments in the dilute solution of ¼, ½, ¾, or 1 per 1000 correspond to an increase of 1, 2, 3, or 4 per cent. in the concentrated solution, and these are the increments usually desired.

Results of Experiments on Sterility.

Three solutions were submitted to Dr. Matthews for an opinion as to their sterility. I am indebted to him for suggesting and undertaking experiments which render it possible to adopt this method of sterilisation with confidence. His report is as follows:—

Experiments to show the sterility of and the bactericidal properties of: (1) Cocaine hydrochloride, 7½ per cent. in 15 per cent. NaCl solution; (2) Kerocaine, 7½ per cent. solution; (3) NaCl, 15 per cent. solution.

—	July 14, 1917.				July 16.		July 20.
	Cholera	Pyocy.	Strep.	Staph.	Pyo.	Staph.	Staph.
7½% cocaine and salt 15%	Nil.	Nil.	Nil.	Sparse growth.	—	Nil.	—
Kerocaine 7½%	Nil.	Slight growth.	Nil.	Copious growth.	Nil.	Fair growth.	Fair growth.
Salt 15%	Nil.	Nil.	Nil.	Six cols.	—	Nil.	—

The three solutions as supplied were sterile. Each solution was tubed off into four sterile plugged test-tubes, and the 12 tubes were divided into four groups, A, B, C, and D, each group containing a tube of solutions (1), (2), and (3) respectively.

On July 12th, 1917, the tubes of group A were inoculated with a loopful of young cholera vibrios, those of B with *B. pyocyaneus*, of C with streptococci, and of D with staphylococci.

[1] Kerocaine is another name for novocaine. I was unable to procure novocaine as such.

(*Continued at foot of next column.*)

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON THE WASSERMANN REACTION IN CEREBRO-SPINAL SYPHILIS.

BY E. H. WALKER, M.B., CH.B. MANCH.,

RESIDENT MEDICAL OFFICER, BOROUGH ISOLATION HOSPITAL; ASSISTANT MEDICAL OFFICER, PUBLIC HEALTH DEPARTMENT, DERBY.

THE following notes of a case of syphilis of the cerebro-spinal system (probably commencing general paralysis of the insane) illustrate the importance of the Wassermann reaction in the cerebro-spinal fluid, even in cases in which the reaction of the blood is negative to this test.

A man, aged 55 years, was sent from a military depôt to the Derby Borough Isolation Hospital with a provisional diagnosis of cerebro-spinal meningitis. The history was that after a few days malaise the man suddenly lost consciousness and vomited once.

On admission to hospital the man's temperature was 102° F., and the following day continued to rise to 103° in the morning and 105° in the evening, and he lay in a comatose condition. Lumbar puncture was performed and about 30 c.cm. fluid withdrawn. Next morning the temperature fell to 101° and by the evening to 98°. Patient still remained more or less unconscious, incontinent, and noisily delirious. Consciousness gradually returned, but delirium persisted for some days with nocturnal exacerbations. The cerebro-spinal fluid on bacteriological examination showed no evidence of an infective meningitis, thus confirming results of clinical examination. Neurological signs were irregular and varied: knee jerks mainly absent, occasionally elicited and exaggerated; plantar reflexes and superficial abdominal reflexes absent. The pupils were unequal, left smaller than right, and its reaction sluggish, reaction to accommodation doubtful.

A diagnosis of general paralysis of the insane having been made, a specimen of venous blood was submitted for Wassermann test and gave a negative result. Lumbar puncture was performed and the *cerebro-spinal fluid* was found to give a "strongly positive" Wassermann reaction; the sediment, after centrifugalisation, showed "only lymphocytes and these in excess—no bacteria."

No history of venereal disease or exposure to infection could be obtained. Without the examination of the *cerebro-spinal fluid* for the Wassermann reaction the exact diagnosis must have remained uncertain, probably until a recrudescence of the disease, by which time treatment would be less hopeful.

The Wassermann tests were kindly carried out by Dr. Sheila M. Ross, bacteriologist to the Derbyshire County Council.

CASE OF SOLITARY CEREBRAL ABSCESS, *M. TETRAGENUS* INFECTION.

BY H. A. COOKSON, M.B., CH.B., F.R.C.S. EDIN.,

MAJOR, R.A.M.C. (T.F.).

I VENTURE to report this case: 1. Because of the comparative rarity of *M. tetragenus* in this position. 2. Because although the abscess was of considerable size and there was obvious evidence of chronicity, the patient was only ill 24 days, having previously appeared in perfect health. 3. Absence of temperature disturbances and meningeal symptoms with gradual progress of the palsy confused diagnosis with a condition of thrombosis.

Private X, at —— General Hospital, B.E.F., France. Aged 39. History: Had been ill only nine days—complained of severe headache. On ninth day of disease had two epileptiform attacks. (C.C.S. report.) 10th day: Previous health good; no illness of note for many years. No specific or tubercular history; young family of six healthy children. In appearance patient was a dull heavy man, with hare-lip (left cleft palate). Replied to questions slowly but correctly. Left heart enlarged slightly; some degree of arterial degeneration. No physical signs in chest or abdomen, no history of bronchitis, &c. Teeth extremely bad. No temperature to note, either pyrexial or subnormal; no history of same from C.C.S. No history of rigors, &c. Urine sp. gr. 1018, no

(*Continued from preceding column.*)

On July 14th subcultures on agar were made from these tubes, and on July 16th, in those instances where growth had occurred, further subcultures from the original tubes were made, and similarly again on July 20th. The results are set out in the appended table.

The conclusions would seem to be: (1) That 15 per cent. NaCl solution has enough bactericidal properties to kill the cultures experimented with in 48 hours; (2) that 15 per cent. NaCl solution containing 7½ per cent. cocaine had slightly less bactericidal properties; (3) that a 7½ per cent. kerocaine solution is considerably more deficient in bactericidal properties, and cannot be expected to kill staphylococci when introduced in large quantities in a period of eight days.

abnormal constituents. There was some weakening of left grasp; no sensory disturbance. He complained of severe headache only. Vomited twice on tenth day.

12th day: Had two fits, not observed, during night; also vomited several times. Speech was now markedly impaired, slurring. Whole of left upper limb paralysed. 13th day: Vomited several times during last 24 hours. Headache less severe; weakness of left lower limb. 14th day: Discs examined "? vascular thickening, no limitation of field of vision."

15th day: Paralysis complete both left limbs, no paresis of face or ocular muscles. 18th day: Difficult to rouse; understood speech and could reply correctly. Discs again examined; "? slight burying of vessels left disc." 21st day: Unconscious, no knowledge of passage of fæces and urine; increased vomiting. 23rd day: Fit observed Jacksonian in character and commencing in orbicular muscles right side of face. 24th day: Died suddenly in congestive attack; great cyanosis of face.

Autopsy.—Cerebro-spinal fluid sterile, cytology negative. Blood in lateral sinuses sterile. General venous enlargement of venous sinuses, &c. Abscess right side cerebrum, pointing slightly anterior to right Rolandic area. Abscess was solitary, size of Tangerine orange; filled with greenish pus. It was well walled in with a thick capsule; no cerebral œdema except at extension to cortex; this appeared to have been acute and recent. The petrous temporal bones showed no disease; no area of infection in accessory sinuses. Route of infection was not discovered. Cultures from abscess gave *M. tetragenus*.

TWO CASES SHOWING THE EFFECT OF THE INCIDENCE OF ENGLISH MEASLES UPON PRE-EXISTING GRAVES'S DISEASE.

BY H. C. JENNINGS, M.B., B.S. LOND., M.R.C.S., L.R.C.P. LOND.,
RESIDENT MEDICAL OFFICER, LONDON FEVER HOSPITAL.

THE onset of an acute infection in a patient already suffering from Graves's disease is to be recognised as a very serious state of affairs. The first case described is an example of this combination which ended fatally, and is of interest in that the acute infection, as such, was mild in character. Graves's disease is due to an excessive secretion of the active principle of the thyroid gland, which in itself may be a perversion of the normal secretion.[1] The exact process initiating this hypersecretion is unknown, although some authorities have suggested an auto-intoxication.[2] Granted that the initial process in Graves's disease is an infection, the presence of a super-added infection might so lower the resistance of the patient as to allow the original infection full sway, causing death by acute hyperthyroidism.

Charts of Two Cases of English Measles Complicated by Graves's Disease.

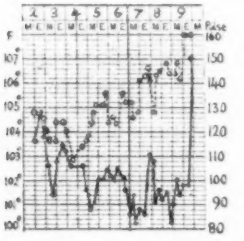


FIG. 1.—Fatal case of measles complicating Graves's disease. Case 1. Showing temperature (continuous line) and pulse-rate (interrupted line). Death occurred on the ninth day.

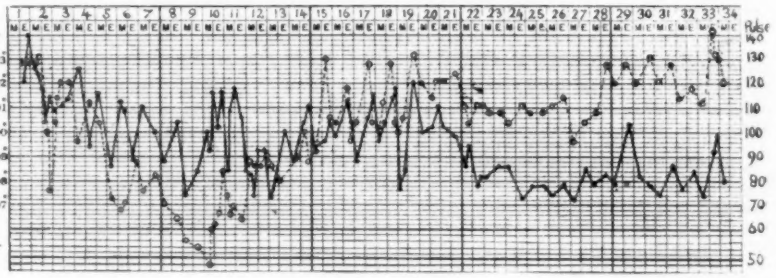


FIG. 2.—Measles aggravating Graves's disease. Case 2. Showing temperature (continuous line) remaining raised for three weeks, and pulse-rate (interrupted line), still 130 per minute, on discharge.

CASE 1.—The patient was a woman aged 31. Her past history was unimportant with the exception of an attack of diphtheria when quite young, certainly prior to the onset of any symptoms of Graves's disease. The latter were said to have begun when the patient was 28 years of age, exophthalmos being the first thing noticed. She manifested the classical signs and symptoms of Graves's disease. The thyroid was not excessively large, but a definite thrill was obtainable over the gland. The onset of the attack of measles was atypical in the absence of catarrhal symptoms, malaise being the only disability of which she complained. On the appearance of the rash, which was remarkable for its pale colour and first suggested rubella, the temperature rose to 104·4° F. The rash had disappeared on the third day, leaving a faint staining and some slight branny desquamation on the forehead and face.

During this time the patient was highly nervous, easily excited, and distressed by profuse sweats following the disappearance of the rash. On the seventh day respiratory embarrassment with basal crepitations, suggesting back pressure in the lungs, appeared synchronously with a small rise of temperature and cardiac dilatation. She then fell into a low muttering delirium, which was broken at intervals by transitory periods of consciousness. From this time until the day of death (9th) the pulse-rate steadily mounted to 160 per minute, it previously never having fallen below 110 per minute. The temperature fluctuated between 100° and 102°, and the respiratory efforts became more rapid and shallow. The temperature rose to 107° just before death, and during the 24 hours preceding death the patient was sweating profusely. The urine contained a small quantity of albumin, but no sugar. Examination of the fundi revealed no abnormality.

The condition of the patient towards the end left no doubt whatsoever that death was due to acute hyperthyroidism.

CASE 2.—This patient was a young woman aged 18. In this instance the thyroid gland was only slightly enlarged, but tremor and tachycardia were present. The attack of measles was mild, although it was three weeks before the temperature reached normal; there was slight tonsillitis, but no respiratory complication to account for this prolonged pyrexia. The tremor increased, and she became very anæmic; slight exophthalmos was present. On discharge her temperature was normal, but her pulse-rate was 130 per minute.

In this instance the attack of measles undoubtedly aggravated the pre-existing thyroid condition. (Four weeks later two-thirds of the thyroid gland were removed under local anæsthesia by Mr. S. H. Rouquette, at St. Thomas's Hospital.) It is interesting to note that a patient suffering from Addison's disease was under treatment for an attack of measles a short time after the preceding patient. The attack of measles ran a normal course, except that profuse staining was present until the twelfth day. On discharge, apparently, the course of the Addison's disease had not been adversely affected.

Dr. T. G. Nicholson recently reported[3] a case of hyperpituitarism, in which an attack of measles produced a fatal result.

I am indebted to Dr. C. R. Box for permission to publish these notes.

A CASE OF TRAUMATIC RUPTURE OF THE ILEUM.

BY JAMES F. O'GRADY, L.A.H. DUB.,
RESIDENT SURGICAL OFFICER, ANCOATS HOSPITAL, MANCHESTER.

IN THE LANCET of April 6th there is a case of traumatic rupture of the jejunum by Lieutenant J. D. Oliver. The following case presents several features similar to those found in Lieutenant Oliver's case, and, apart from this, traumatic rupture of the intestine is not a very common accident.

Patient, aged 61, admitted to hospital at 8.30 A.M. on March 13th, 1918. At 7 A.M. the same morning, when pushing an iron bar into furnace fire, progress of bar was arrested, and lower part of abdomen struck end of bar. He was immediately seized with severe abdominal pain, and lay on ground until ambulance brought him to hospital. He had not vomited up to admission, and did not do so until after operation.

On admission patient lay on his back with knees drawn up, obviously in great pain. T. 99°, P. 80, of good volume. Abdomen rigid; no distension. Liver dullness not diminished; no dullness in flanks. Tenderness well marked in suprapubic region and epigastrium; more marked in former region. No sign on abdominal wall of bruising or abrasion. Patient passed urine freely; no trace of blood in it. Admitted for observation.

Eight hours after admission pain had increased and spread; still no distension nor loss of liver dullness; T. subnormal, P. 100. I performed laparotomy under spinal anæsthesia. 2 c.cm. of a 5 per cent. solution of stovaine Billon injected; excellent anæsthesia up to about 2 inches above nipple line. Abdomen opened through right rectus. Bowels seen to be in a state of general peritonitis; a little free fluid, not offensive; no gas. About middle of ileum a perforation about size of sixpence on antimesenteric border. Intestine at site of perforation was loosely adherent to anterior abdominal wall about midway between umbilicus and pubes. Gut at site of perforation showed no sign of previous ulceration. Perforation was sutured up in transverse direction. Abdomen was thoroughly swabbed out with cloths wrung out of hot saline and explored; no injury to any other organ. Drainage-tube placed down into pelvis; abdomen closed. During operation patient given pint of saline intravenously; after operation continuous rectal saline. Eserine sulphate, gr. 1/60, six hourly and pituitary extract 1 c.cm. administered. Marked improvement day after operation. Drainage-tube removed on fifth day. There was, at this time, profuse and offensive discharge. General condition improved until ninth day, when discharge became fæcal. He then gradually became weaker and died, 13 days after operation.

I am indebted to Captain John Morley, R.A.M.C., honorary surgeon to this hospital, for kindly giving me permission to publish this case.

[1] McCarrison: The Thyroid Gland and its Diseases.
[2] H. Mackenzie: Allbutt's System of Medicine, vol. iv., Part I., p. 361.
[3] THE LANCET, 1917, ii., 87.

Reviews and Notices of Books.

MILITARY MEDICAL MANUALS.

(Under the general editorship of Sir ALFRED KEOGH.)

I. *Wounds of the Skull and Brain.* By C. CHATELIN and T. DE MARTEL: with Prefaces by Professor PIERRE MARIE and F. F. BURGHARD, C.B., M.S. 1918. Pp. 313. Price 7*s.* 6*d.*

II. *Wounds of the Abdomen.* By J. ABADIE. Edited by Sir W. ARBUTHNOT LANE. 1918. Pp. 289. Price 7*s.* 6*d.*

III. *Wounds of the Vessels.* By L. SENCERT, Assistant Professor to the Faculty of Medicine, Nancy. Edited by F. F. BURGHARD. 1918. Pp. 270. Price 6*s.*

IV. *The Treatment of Fractures.* By R. LERICHE, Assistant Professor in the Faculty of Medicine, Lyons. With a Preface by F. F. BURGHARD. 1918 Vol. I., pp. 207; Vol. II., pp. 305. Price 6*s.* each.

V. *War Otitis and War Deafness.* By Drs. H. BOURGEOIS and SOURDILLE. Edited by Major J. DUNDAS GRANT, R.A.M.C. Pp. 231. Price 6*s.*

University of London Press.

I. THIS volume of a useful series appeals to busy readers by its conciseness and systematic arrangement. *Method* is the keynote of the book, and is exemplified in the opening section, which is headed "Interrogation of the Patient." From this the authors proceed to a description of physical tests. We note that cold water (Lombard) is used for testing unilateral cochlear function and Bárány's noise-apparatus is not mentioned, although the latter has been found the more convenient in skilled hands. It has long been recognised that subjective cerebral disorders may result from meningeal adhesions, but the authors suggest that another cause is to be recognised in lesions of the venous—especially the superior longitudinal—sinuses, modifying the cerebral circulation. The last sensory disorder to clear up after monoplegiæ is astereognosis. In dealing with injuries to the different lobes of the brain the authors give a particularly good résumé of the physiology of each lobe. Aphasia is dealt with lucidly, rightly ignoring all the unproven and inaccurate assumptions of earlier teaching. The authors make a bold plunge into the nebulous physiology of the cerebellum by their clear interpretation of the deviation tests, while the technique and instrumentation of craniotomy and craniectomy are freely illustrated by good pictures. The localisation and extraction of projectiles receive rather cavalier notice. Cerebral hernia, encephalitis, and other sequelæ which the operator has learned to fear are all adequately dealt with. Taken as a whole, this is an exceptionally well-thought-out treatise and one which will be of real aid to the war surgeon.

II. The treatment of abdominal wounds is still a vexed question, and the reader naturally turns to a new book on the subject with some pleasurable anticipation of a fray. As Sir Arbuthnot Lane remarks in his preface, abdominal, like other surgery, requires a peculiar type of enthusiasm. But the value of this book is primarily for those whose bent has not formerly lain in the direction of abdominal surgery. A history of the conclusions to be drawn from former wars, as well as from the earlier experiences of the present campaign, forms a useful beginning. The author points out a parallelism between the treatment of choice and the nature of the wounds as determined by the nature of the fighting, whether massed or open, in trenches or hand-to-hand. Very pertinent are the diagrams of penetrating wounds which do not injure the viscera. Lesions of the small intestine, the author tells us, only rarely heal spontaneously, those of the colon more often, those of the liver frequently. Combined lesions of abdominal and thoracic viscera are classified into types, of which the prognosis and treatment are seen to vary widely. In the treatment of all or any abdominal wounds, laparotomy is the treatment of choice as a general rule, and the indications are clearly summarised. Medical treatment, nevertheless, receives adequate notice, but the reader might have been told more of after-treatment and possible sequelæ. A concise bibliography completes a work in which the surgeon overseas will find a valuable companion.

III. Professor Sencert's treatise is divided into two parts—wounds of the vessels in general and wounds of individual vessels, Part I. serving as a text-book and Part II. as a book of reference. The author rightly lays great stress on the point that while bleeding may cease following a wound of a vessel, death may nevertheless occur within a few hours without further loss of blood; hence the importance of limiting the early loss. The discussion of hæmatomata is both full and closely reasoned, the physical signs of superficial and deep forms being accurately portrayed. The description of methods of preventive hæmostasis in operating on a hæmatoma will be appreciated by the surgeon who, on opening such a tumour, has been drenched with blood during the process of gently removing clot. Useful diagrams illustrate the method of blood transfusion by Elsberg's cannula, and the argument on arteriorrhaphy *versus* ligature deserves careful study. Dealing with wounds of the neck, preference is given to suture for injuries of the carotid bulb or internal carotid; in all other cases in this region to double ligature. Other regional injuries are dealt with seriatim. The book gives a mass of useful information to all who have to deal with wounded vessels under a great variety of circumstances, varying from the simple application of a tourniquet under fire to elaborate arrangements in the operating theatre for dealing with varicose aneurysms or the plastic repair of wounded vessels.

IV. Fractures of limb bones alone are the subject of Professor Leriche's two volumes, which do not deal with the vertebræ, skull, or pelvic and thoracic girdles, except in so far as these may be injured concomitantly with hip and shoulder. Vol. I. treats of fractures involving joints; Vol. II. of fractures of the shaft. For joint wounds the author holds to prophylaxis by open operation, to avoid or check sepsis; and, as he is an adherent of aseptic rather than antiseptic methods, the book affords some relief to those who have studied the rival merits of bipp, flavine, eusol, brilliant green, and other preparations. The sections (Vol. I.) dealing with the evacuation of patients with wounded joints are very timely. In treating shaft fractures the author's key-note is immediate total subperiosteal esquillectomy. Many British surgeons will disagree with him, while recognising that his confidence is based on a mass of personal experience. No one, however, will cavil at his contention, repeated in both volumes, that we possess no more effective means than sunlight for reducing the severity of a wound and accelerating its spontaneous healing. The chapter dealing with multiple fractures has practical value. An index would aid the reader who is likely frequently to turn the pages of these two volumes.

V. This excellent manual has been translated into English and edited by Major Dundas Grant, whose name is a guarantee for the accuracy of the translation, and we have found nothing worse than one or two misprints which have escaped correction. The original work appears to have been closely followed throughout and loses little by translation, while to most British readers its accessibility has thereby been greatly increased.

An Introduction to the History of Medicine. By FIELDING H. GARRISON, A.B., M.D. Second edition, revised and enlarged. London and Philadelphia: W. B. Saunders Company. 1917. Pp. 905. Price 28s. net.

WE reviewed the first edition of this excellent book in THE LANCET of April 11th, 1914, and are glad to see that a second edition has been so soon called for. The first edition ran to 763 pages, the second contains 905. There are omissions as well as additions; for instance, the test questions which appeared on p. 730 of the first edition are eliminated in favour of a section called Hints on the Study of Medical History, which is printed at p. 834 of the second edition. We mention this addition as being one which is obvious at first sight, but a careful examination of the book will show additions on nearly every page; thus the section dealing with the period from Egyptian Medicine to Mediæval Medicine now takes up 65 pages, whereas in the first edition it only extended over 57 pages, and many investigators are referred to whose works were not accessible at the time of the earlier edition, a list of such being given in the preface. Illustrations are given in greater number than before, including some most interesting figures discovered at Knossos by Sir

Arthur Evans, while the illustration of the Zodiac Mannikin on p. 134 of the first edition has been replaced by two others on p. 182 of the second edition. That the work has been brought well up to date is shown by the concluding section, which deals with the war and the many medical problems to which it has given rise.

We are glad to see from statements in the preface that much good work is being done in the United States in the study of medical history, and, we may add, for the benefit of the third edition, which doubtless will appear in due course, that the recently formed school for the study of the same subject at Oxford is doing good work and has published one volume of essays, which was reviewed in these columns on Jan. 26th. We notice one slight slip on p. 302, where, in contrasting the eighteenth century with the previous one, Dr. Garrison points out that the eighteenth century was the age of formalism and systems. He proceeds:

"Even the music of Mozart, Haydn, and Gluck ..... seems of precise and formal cut if compared with the sublime polyphony of Palestrina or the splendour of that seventeenth-century giant, Bach; while Handel is absolutely square toed, silver buckled, and periwigged in style."

Now if Bach is a seventeenth-century giant so is Handel, for they were both born in the same year—namely, 1685—but naturally all their life's work was eighteenth-century.

The book is as good as any such work can be, remembering that it does not try to be a complete history of medicine, but only a handbook thereto.

Ambulance de "l'Ocean," La Panne. By Dr. A. DEPAGE. London: H. K. Lewis and Co.; Paris: Masson et Cie. Fascicule 1, July, 1917. Price 18 fr., or 14*s*.

THIS volume (which has been delayed in transmission) consists of a collection of papers illustrating the work carried out at La Panne under the direction of Dr. Depage. The first article describes the hospital itself and its highly efficient equipment, narrating the history of its development and its advanced station for laparotomy and for the treatment of cases of urgency. Dr. Debaisieux follows with an able review of the methods, past and present, used in the treatment of wounds, their relative value, and reasons for being adopted or discarded. The method of Carrel, as used in the hospital, is fully described with a wealth of illustration. The secondary suture of war wounds is dealt with in a sequel detailing the methods of defining the time for performing secondary suture, with a series of excellent pictures illustrating results in various regions of the body. These results appear to be commensurate with the care taken, Carrel's method as originally described being rigidly adhered to. A paper by Dr. Janssen on Cerebral Injuries by Projectiles deals with his individual experience of all types of injury to the skull. The conclusions reached are similar to those familiar in our own service. A number of shorter articles deal with fractures of the lower jaw, the intravenous injection of peptone, the neurological section of the hospital, prophylaxis and treatment in cases of tetanus, blood pressure in cases of gas-poisoning, and researches into the anaerobic infections. The compilation leaves the impression of excellent work well reported, and suggests emulation on the part of other self-contained medico-military organisations.

Baby Welfare: A Guide to its Acquisition and Maintenance. By W. E. ROBINSON, M.D., Assistant Physician and Pathologist to Infants Hospital, London. London: T. Fisher Unwin. 1918. Pp. 206. Price 7*s*. 6*d*.

Dr. Robinson tells us that he has written his book with the object of giving to the untrained nurse and the newly made mother the same insight into the internal working of the infant as the driver has into the working of his locomotive engine. He begins, therefore, with a brief outline of the healthy infant, passing on to a more detailed description of its seven systems, and then to an account of the working processes of the living tissues (using, by the way, the word pathology to denote normal metabolic activity). The feeding of the normal infant is then considered in detail, and the final third of the book only is given up to abnormal and ailing babies. We congratulate the author on his careful study of the healthy infant, about whom it has too long been difficult to obtain exact information. But we are not sure that the infant whom Dr. Robinson takes as his type is a perfectly healthy creature. The author's infant remains "white, with a peculiar pink tint," up to the age of 9–10 months; he lives in a "day-nursery" of which the temperature "should be from 55°–65° F.," and in a night-nursery which "should be warm in cold weather," and when deprived of his mother's milk lives on a fat whey, milk-and-water mixture, which requires three pages of appendix to describe in part. There are also old-fashioned locomotives (to continue Dr. Robinson's own simile) not quite adapted for all-round work and unable to take gradients. But such infant or locomotive is not quite normal.

I. *The Influence of Sunlight in the Production of Cancer of the Skin.* By C. NORMAN PAUL, M.B., Ch.M. 1918. Pp 57. Price 10*s*. 6*d*.

II. *Tumours, their Nature and Causation.* By W. D'ESTE EMERY, M.D., B.Sc. Lond. 1918. Pp. xx. + 146. Price 5*s*.

III. *The Biology of Tumours.* By C. MANSELL MOULLIN, M.A., M.D. Oxon., F.R.C.S. Eng. 1916. Pp. 55. Price 2*s*. 6*d*.

London: H. K. Lewis and Co.

I. THIS book is an atlas with accompanying descriptive letterpress of new growths and associated irritative lesions of the skin of the face and neck. The majority of the plates illustrate the features of rodent ulcer, but, in addition, chronic solar dermatitis, cutaneous horn, epithelioma, and epithelioma adenoides cysticum are illustrated. Most of the reproductions are very successful and the scale is adequate (from one-half to natural size), but in some cases detail due to relief has suffered in process reproduction. In the legend to Fig. 31 the terms "right" and "left" have been transposed.

II. Dr. Emery's essay is a special plea for the parasitic hypothesis of cancer. Granted the author's three cardinal assumptions—viz., ultra-microscopic size of the parasite, intracellular or intranuclear site, and production of a toxin which has the power of inducing cell-division—a system results, as is clearly expounded by the author, which would behave just as does the group of new growths. Facts from a wide field are skilfully marshalled to support the fundamental assumptions, and the difficulties and objections which can be made against them are clearly stated and met with great ingenuity and conviction.

III. Mr. Mansell Moullin divides tumours etiologically into two classes: (1) tumours due to the revival of the primitive power of asexual reproduction—gemmation tumours; and (2) tumours due to defects in structural development. Inclusion dermoids, meningo-myelocele, and many cysts fall into the latter category. The majority of new growths are assigned to the first class and the book deals mainly with them. The differences in energy of growth and degree of differentiation, in which respects the new growths under consideration form an unbroken series, are regarded as due to the stage in development at which the buds were separated from the parent tissue. A somewhat rigid form of the recapitulation theory, as enunciated by the embryologists of 30 years ago, is invoked by the author, who draws a mystical distinction between the ordinary powers of growth of the tissues and the "inherent powers of asexual reproduction latent in the somatic tissues."

A Class-Book of Organic Chemistry. By J. B. COHEN, Ph.D., B.Sc., F.R.S. London: Macmillan and Co., Limited. 1917. Pp. 344. Price 4*s* 6*d*.

WE commend to all who wish to realise the importance nowadays attaching to the study of organic chemistry the admirable little essay which lies before us. The rapid growth of organic chemistry in recent years has been due, as Professor Cohen well says, to the blending of science and industry. This blend has advanced medical science as well as the arts and industries in very large degree. The study of the architecture of the molecule was the beginning of this remarkable progress. The bearings of this study are well and clearly described in this book, which has been written as an introduction to organic chemistry for the use of first-year medical students and for senior science students in schools. The subject is treated from both practical and theoretical standpoints concurrently—a plan which makes the book serve the combined purpose of text-book and laboratory manual.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

—o—

Appointment of Committees.

AT the recent meeting of the General Medical Council the following committees were appointed on the nominations of the various Branch Councils:—

Examination Committee.—Sir F. Taylor, Dr. Elliot Smith, Dr. Caton, Dr. Russell, Dr. Cash, Dr. Norman Walker, Sir John Moore, Sir Arthur Chance, and Dr. Kidd.

Education Committee.—Dr. Norman Moore, Dr. Barrs, Sir F. Champneys, Dr. Mackay, Mr. Hodsdon, Dr. Knox, Sir A. Chance, Sir Bertram Windle, and Dr. Dixon.

Public Health Committee.—Sir Arthur Newsholme, Dr. Latimer, Mr. Verrall, the President, Dr. Littlejohn, Dr. McVail, Sir J. Moore, Dr. Magennis, and Dr. Coey Bigger.

Finance Committee's Report.

Mr. TOMES, the senior treasurer, submitted the report of the Finance Committee.

It showed that the income of the General and Branch Councils for the year ending Dec. 31st, 1917, was £7710. The expenditure during the year was £7342, leaving a surplus of £368. The income of the General Council at £1507 showed an increase of £57 19s., which was partly due to an increase of £56 in Colonial and Foreign Registration fees. The English, Scottish, and Irish branches showed decreased receipts of £164 3*s.* 3*d.*, £118 7*s.* 11*d.*, and £56 17*s.* 6*d.*, respectively, notwithstanding their larger receipts from investments of £68, £34, and £6, respectively. In each case the decrease was due to smaller receipts from registration fees, the total reduction in the number of original registrations of British qualifications effected during 1917 being 87. "All things considered," the report added, "the decrease is not very serious."

Dealing with the surplus the report proceeded:—

"The surplus of £368 for the year is not large, but taking all circumstances into account may be regarded as satisfactory. It may be noted that as the dividends upon the war loans are now paid without deduction of income tax, this tax will have to be paid during the current year. During the past seven years the income had exceeded the expenditure on the average by over £1100 a year.

Should an election of Direct Representatives take place this year, the cost will not be less than £800, and will most likely be considerably more, owing to the increased cost of labour and materials. Printers' charges increase every few months. An election in the present year, when so many medical men are away from their homes, would be unsatisfactory, and it is much to be hoped that some means may be found of postponing it until a more suitable time.

The number of original registrations last year (not including those on the Colonial and Foreign List) was 985. It is difficult to forecast the number for this year, but up to the present there has been a slight falling off. As this is the principal source of income, the prospect for the current year's revenue is not very good."

Dealing with the Dental Fund, the report stated that—

The fund showed a deficit of £130, against a surplus of £72 in 1916. This was mainly accounted for by a further drop of 26 in the number of original registration fees. "The state of the fund," the report added, "is in a satisfactory position on the whole, and there has been a surplus each year till now for some considerable time; but there is every prospect of a further decline in the income derived from registration fees owing to the calling up of dental students for military service. In the interests of the community it is most important that the registration of newly qualified dental practitioners should increase rather than fall off."

Mr. TOMES, in moving the adoption of the report, said that it was, on the whole, fairly satisfactory, considering the position with regard to the qualification of medical men and dentists. The Council had enough money to get along comfortably without interfering with any of its investments. There had been a great increase in the cost of printing and paper, and a considerable increase in law expenses. That was due to the fact that there had been a great deal of penal business, not only of penal business which came before the Council, but of cases which were brought before the Penal Cases Committee but did not require inquiry before the Council. There was no doubt that the Council's income would decrease in the next few years owing to falling off in qualifications, and its expenses would increase.

Mr. HODSDON formally seconded, and the motion was agreed to.

Preliminary Examinations in India.

Dr. MACKAY submitted a report from the Education Committee dealing with preliminary examinations in India. The report stated that—

"In reply to a communication from the India Office, dated March 25th, 1918, regarding the recognition by the General Medical Council of certain school examinations in India as qualifying pupils for admission to the Students Register, the Registrar was requested to inform the Under Secretary of State for India that the Council will recognise for the purpose mentioned all school examinations in India which are accepted by any Indian University as equivalent to its own Matriculation Examination on the same terms and subject to the same conditions as those on which that examination is recognised by the Council, and further, that any request for the modification of the Regulations which at present apply to Indian Preliminary Examinations put forward by the Universities of India will receive the careful consideration of the Council."

The report was duly received.

Examination Committee.

Reports were submitted for the Examination Committee: (1) On an analysis of the annual tables for 1917 showing the results of professional medical examinations; and (2) on various matters relating to the Apothecaries' Hall, Dublin.

Sir JOHN MOORE, with reference to the annual tables, pointed out that there were great variations in the percentages of students passing in medicine and surgery and in midwifery.

The PRESIDENT said that the percentages largely depended on the numbers of students entering the examination. If two students entered and only one passed the percentage of rejections would be 50 per cent. If both passed then the percentage of passes would be 100. The percentages of passes at examinations depended very much on the number of candidates, and he did not think the point raised by Sir John Moore was very important.

Dr. MAGENNIS remarked that he had little to say with regard to the report relating to the Apothecaries' Hall, Dublin. He had become quite philosophical in regard to it. The members of the Council had heard of the necessity for exercising economy, and he thought that it might be exercised with regard to this report, for in his opinion it was not worth the money expended on it.

The reports were formally received, and the following recommendations of the Examination Committee were adopted:—

1. That the report of Dr. William Boxwell and Dr. Robert Rowlette on the examinations held from December, 1916, to November, 1917, be forwarded to the Apothecaries' Hall of Ireland for their information, with the request that they will favour the General Medical Council with any remarks they may desire to make thereon, in time for the meeting of the Council in November, 1918.

2. That the Apothecaries' Hall be requested to continue to furnish the tables of exemptions from, and results of, examinations as heretofore, giving particulars of marks, and when the candidate had been previously examined by the Hall and had passed some portion of the examination the date of such examination.

Students Registration Committee.

The report of the Students Registration Committee was received, and a recommendation was adopted approving of the recognition as teaching institutions of Winchester School, King Edward VI. Grammar School, Southampton, and University College School, Hampstead, N.W.

Dental Education and Examination Committee.

Mr. TOMES submitted a report from the Dental Education and Examination Committee. It related in the first place to a correspondence which had taken place with the Education Committee of the city of Birmingham with reference to the suggested employment of dental nurses to assist in the school clinics. The report proceeded to state that—

"A further communication had been received from the Education Committee, dated March 22nd, 1918, stating that it was intended that these nurses should only carry out the orders and instructions of the school dental surgeons. The instructions contemplated would include such minor forms of treatment as scaling of dirty teeth, simple fillings of decayed teeth, and the extraction of temporary teeth, without the use of anæsthetics. The treatment in each case would be that ordered at the time by the dentist to be performed in the same room with him, and not considered finished until the dentist had inspected it and passed it as satisfactory. The position of these dental nurses would be precisely analogous to that of a hospital nurse undertaking a surgical dressing according to the instructions of a surgeon. The Committee desired to be informed whether they could proceed with the proposed scheme without the dental surgeons incurring the risk of having to appear before the Council to answer a charge of being guilty of infamous conduct in a professional respect.

By direction of the President the communication was referred to the chairman of the Committee, and by his direction a letter was written to the secretary of the Education Committee, informing him that the Council would not meet until the latter part of May, but that as the arrangements proposed were quite in accordance with the views expressed on behalf of the Council in the previous correspondence, there could be no practical doubt that they would meet with the Council's approval.

The Committee recommended that the Council should endorse the action taken by direction of its chairman.

By direction of the President another communication in regard to the alleged shortage of medical and dental students was referred to the committee. The matter of the attendance of medical students at their professional studies has been fully dealt with already and statistics have been presented to the Council from time to time. Statistics in

regard to dental students, however, have not been presented. The number of dental students registered during 1917 was only 143, as compared with 280 in 1911, 336 in 1912, 361 in 1913, 294 in 1914, 217 in 1915, and 158 in 1916, and was the smallest number registered in any year since 1890, when the number was 140. In the view of the committee these figures indicate the serious nature of the effect of the war upon the number of dental students entering upon professional studies. No statistics are available as to the actual attendance on professional study, but there is every reason to believe that the numbers have been similarly depleted. It is understood that the question is now receiving the attention of the Ministry of National Service."

Mr. TOMES explained the action which, as chairman of the committee, he had taken in regard to dental nurses at Birmingham and felt sure that the Council would approve of the action he had taken.

The report and its recommendations were agreed to.

Public Health Committee.

Sir JOHN MOORE submitted a report from the Public Health Committee in which it was recommended that certain certificates granted to Special Reserve, Territorial, and temporarily commissioned medical officers should remain valid for examination purposes after the officers in question had been demobilised or had resigned their commissions. This was suggested in a letter from Surgeon-General M. P. Holt, Director of Medical Services, British Salonika Force.

The report and the recommendations were adopted.

Pharmacopœia Committee.

Sir JOHN MOORE presented a report from the Pharmacopœia Committee, which stated that—

The number of copies of the British Pharmacopœia which were sold by the publishers between November 25th, 1917, and May 25th, 1918, was 870. The number sold in the year ending May 25th, 1918, was 2090. The total number sold since the date of publication was thus 30,224. The third issue of 5000 copies, containing leaflets amending or altering the text in accordance with the action taken by the committee on behalf of the Council, is now in course of distribution. The report proceeded: "In February, 1918, representations were made to the Executive Committee by the Government departments concerned regarding the imperative necessity of restricting the use in pharmacy of certain oils and fats required for other purposes. After consultation with the Pharmacopœia Committee it was decided that the emergency required that the use of alternative bases for official liniments, ointments, &c., should forthwith be sanctioned. Accordingly, the President was authorised, on behalf of the committee and of the Council, to publish in the *Gazettes* of London, Edinburgh, and Dublin an intimation in this respect, and to direct its inclusion, until further notice, in the copies of the Pharmacopœia issued to the public.

At the instance of the Council of the Pharmaceutical Society of Great Britain, the Privy Council, on Dec. 11th, 1917, issued an Order directing the transfer, from Part 2 to Part 1 of the Schedule to the Poisons and Pharmacy Act, of Diethyl-barbituric acid [barbitone], and its congeners, "whether described as veronal, proponal, medinal, or by any other trade name, mark, or designation." This step will afford better protection to the public against the dangers incidental to the use as hypnotic drugs of poisonous urethanes, ureides, and the like."

Sir JOHN MOORE, in explaining the terms of the report, said that the members of the Committee had to regret the loss of their colleague, Sir George Hare Philipson, to whose services on it he desired to bear testimony. The Committee also had to regret the death of the distinguished leader of American pharmacy, Dr. Joseph Price Remington, who had rendered very valuable assistance to the Committee in the preparation of the British Pharmacopœia, 1914. A letter of sympathy had been sent to the Philadelphia College of Pharmacy, and a cordial answer had been received. This was gratifying at a time when our American kinsfolk were fighting with us in the fields of France.

The report was formally received.

Appointment of General Registrar.

Colonel Norman King was unanimously reappointed General Registrar and Mr. A. J. Cockington Acting Registrar in his absence on military duty.

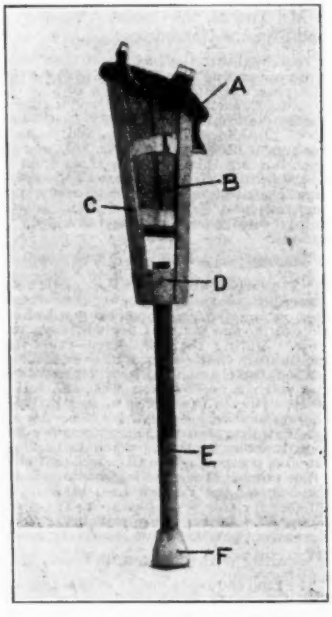
THE LATE MR. HAROLD SALTER GETTINGS.—Mr. H. S. Gettings, who died on June 15th at Shothanger, Feldon, Boxmoor, from an illness following a railway accident in February last, was the eldest son of John Salter Gettings, L.R.C.S., L.S.A., of Chasetown, near Walsall. Qualifying with the Scottish triple qualification in 1905, he obtained the D.P.H. of Birmingham in 1910 and the certificate of the London School of Tropical Medicine in the following year. Among his first appointments were resident assistant surgeon at the Queen's Hospital, Birmingham, clinical pathologist at Nordrach-on-Dee, and pathologist to the West Riding Asylum, Wakefield. He had recently done excellent work on the Medical Research Committee.

New Inventions.

THE ERSKINE PROVISIONAL LIMBS.

A PAMPHLET, dated May 20th, 1918, issued from the Erskine Research Laboratory at the Princess Louise Scottish Hospital for Limbless Sailors and Soldiers, describes some of the forms of provisional limbs at present elaborated and their uses. The advantages claimed may be summarised thus:

It has been customary for those who have lost a lower limb to use crutches for ambulatory purposes. In doing so the stump is left hanging as a useless appendage, not participating in the movement, and if sufficient time elapses disuse atrophy results. If instead of crutches a provisional limb is applied, the stump participates thus early in the action of walking, and developing its muscles and nerves under the control of the spinal and cerebral centres. The balance of the body is adjusted to the new conditions, and equilibrium established. The parts of the body through which its weight is transmitted to the provisional limb become hardened by use, and ready to bear the pressure of the body on the permanent limb when it is ready to be worn. The necessity for massage and electricity is lessened. Such a limb often aids in the healing of a sinus, the movement favouring the loosening of the foreign body and aiding its discharge, and it further aids by restoration of health. Dressings can be applied to the extremity of the stump through the open bucket.



The Erskine provisional limb and pin-leg. A, pelvic elliptical ring; B, compressible bucket; C, supporting laths; D, central block; E, adjustable pin-leg; F, foot block.

Shrinkage of the circumference of the stump to its permanent dimensions is rapidly secured by the constant wearing of a provisional limb, which ought to be applied as soon as the wound of the stump is firmly healed. The patient at the beginning is weak and cannot stand prolonged use of the limb, and this, in one sense, is an advantage, as time is afforded for the stump to get gradually accustomed to the use of the provisional limb, and excoriations and pressure points are thus avoided. The mental effect is likewise of service, as the patient attains progression by an apparatus more closely applied to his body, and less obtrusive than crutches and the folded empty trousers. In order to obtain the best results, the limb, after the first few days, should be constantly worn, and when it is laid aside for a rest the patient ought to recline and have the stump elevated to prevent swelling.

The limb as applied to a thigh amputation consists of a peg-leg with a bucket, made in three sizes, with an elliptical ring (in eight different diameters) to suit the anatomical configuration of the pelvis. The length of the peg-leg is also adjustable. The bucket itself is fashioned in such a way as to enable the lower end to be constricted by means of straps. For this simple peg-leg one with a knee-joint movement can be substituted when desirable and a movable foot can be added. The peg-leg represents a first experiment in the standardisation of artificial limbs; if a part is damaged it can be repaired by a local carpenter or replaced from stock at Erskine Hospital.

Dr. Herbert E. Durham has presented to the Museum of the Royal College of Surgeons of England a valuable collection of surgical instruments, formerly the property of his father, the late Arthur Durham, the well-known surgeon to Guy's Hospital. Among them are sets of those especially associated with Durham's name and also Aston Key's lithotomy case, including that surgeon's straight staff; this case is of interest, as it will be placed beside that containing the lithotomy instruments designed and used by his famous uncle, Sir Astley Cooper. Lastly, the donation includes an autolaryngoscopic mirror given to Durham by Señor Garcia.

THE LANCET.

LONDON: SATURDAY, JUNE 29, 1918.

The Equalised Rations of the Allies.

THE calculations in regard to the food supplies and requirements of the Allies on a common basis, which have been undertaken by an International Scientific Commission, the personnel of which we announced recently, should culminate in a standard of dietaries of the greatest value. Elementary principles, pressed home by the exigencies of war, have already been considered by this commission, and an agreement has been reached defining the minimum food requirements of "the average man." These elementary principles conform to accepted medical knowledge. Our physiological authorities have devoted earnest attention to these questions for some time, and their views are now confirmed in so many directions by a conjoint commission of international workers, including the leading thinkers on dietetic questions in France, Italy, Belgium, and the United States, that little doubt should remain as to the sound basis of home opinions. As Professor E. H. STARLING has well pointed out, the object of rationing is not to make people eat less, but to make them eat differently; rationing should bring it about that, in the face of a shortage of some important foods, the economy of the nation can be rearranged, with the result that every individual may satisfy his appetite and, having enough to eat of wholesome food, may maintain his power of work.

The necessities of the present time, of course, compel restrictions. But, though they are restrictions in regard to the choice of food, they should leave the individual amply provided with all the food elements essential to carry on his vital processes, if rationing is intelligently conducted within the great scope afforded by international alliances. Long-established conventions have given rise to some inconveniences under a régime of rations; and routine, based on conservative principles in diet, is in some instances found to be hard to abandon, while the remarkable powers of adaptation of the human machine are not given any play save under the stress of necessity. Meat, the principal item under restriction, has long been regarded as essential to a diet, but the limitations of the supplies imposed by the war have shown us that its chief value lies in its fat, and that its proteins can be replaced from the tissue-repairing point of view by such things as milk, cheese, and eggs, and by proteins of vegetable origin. The members of the International Scientific Commission are clear on these points, for they have declared that it is not desirable to fix a minimum meat ration in view of the fact that no physiological need exists for meat, but the Commissioners regard it desirable to fix a minimum ration of fat. This, they conclude, can be supplied equally well from animal and vegetable sources, although we do not find any distinction drawn between the value of animal fats containing fat-soluble vitamines, and of vegetable fats which seemingly do not contain these accessory substances. Whilst acknowledging the prime importance of the calorific value of food substances, we cannot in the light of modern teaching regard food simply as fuel without regard to its digestibility and appetising or æsthetic attractions, not forgetting the part played by obscure substances conducive to the well-being of the consumer. The well-known physiological experiments on pigeons may be recalled, in which it was shown that although the birds were allowed a full calorific value as well as abundant protein in their diet they died because certain vitalising constituents were absent.

With these considerations in mind we can well endorse the conclusion of the Commission in their present report that in the Allied countries all propaganda, having as an object the encouragement of food production or of economy in the use of food, should be organised and directed by men of science well acquainted with the subject. The decisions as to the calorific value of the home production in each of the Allied countries, and as to the needs in calories of each population, should enable the Commissioners to estimate the amounts of imports necessary for the maintenance of the various populations, and to deal with any exportable surplus; this is an Allied policy in the matter of food-supply, the adoption of which will be to the undoubted advantage of the nations concerned. The scheme of rationing adopted in each country will help the Commissioners to arrive at a satisfactory formulary adaptable to the general needs where its success in actual practice has been due to scientific direction. In Great Britain the able administratorship of Lord RHONDDA and his staff is admitted on all sides, and our food provisions have now been in operation for a sufficiently long period to show that no prejudice to the public health has resulted. The "test-tube" foundations of our system of dieting, carped at by certain critics, have in the main been justified, and the teachings of science have proved consistent with the results of practice.

Immediate Suture of Gunshot Wounds.

NOT long ago we alluded to the immediate suture of all gunshot wounds as an unrealisable dream, but it appears that French surgeons are not willing to let the dream remain unrealisable for long. At a recent session of the Research Society of the American Red Cross in Paris Dr. LEMAITRE gave a full account of a series of more than 2500 cases admitted to his hospital since he adopted immediate suture as a routine method. Primary suture had been possible in 79 per cent. of the cases, delayed primary suture in 11 per cent., secondary suture in 5 per cent., while no surgical measures whatever were required in the remaining cases. The figures speak clearly. The points in technique on which Dr. LEMAITRE lays most stress

are the complete removal of foreign material from the wound, the excision of every particle of devitalised tissue resulting from the injury, and, of course, strict observance of aseptic precautions. The period of eight hours immediately following the injury is the most propitious for immediate suture, but a reasonable measure of success can be attained at a much later epoch.

Captain W. GIRLING BALL, R.A.M.C., in another column of our present issue, deals with the time factor from recent experience at a base hospital in France. At many a casualty clearing station the surgeons in charge are now able to carry out radical excision of most wounds, followed by primary suture of the tissues after removal of the damaged portions. Owing to pressure of work this cannot always be done, nor is it always advisable to make the attempt, for to ensure the removal of all damaged tissue in wounds involving considerable areas of muscle is difficult. Although at the time there may be nothing to indicate that damaged tissue has been left behind, evidence of the fact will be apparent within a day or two. Delayed primary suture should then be the object in view. The chief bar to complete wound closure is found by LEMAITRE, in agreement with TISSIER and DUVAL, to be the presence of a hæmolytic streptococcus. At the same meeting of the Research Society of the American Red Cross Dr. VAUCHER gave the results of some early bacteriological observations on gunshot wounds. For six to eight hours after their infliction the wounds were found to contain no large number of bacteria, whether examined directly or by means of culture. In later observations on the flora of wounds examined six to ten hours after suture, a drain having been left in, the discovery of streptococci necessitated the complete opening up of the wound. If aerobes other than the streptococcus were present it proved advisable to leave the drain in position for a further period of 36 to 48 hours, the wound being watched carefully from hour to hour, and especially so if anaerobes were found. The streptococcus showed itself the most potent factor in determining failure, another being the presence of a leaking blood-vessel in the wound. VAUCHER has shown repeatedly that provided a wound is excised with care and dressed aseptically, it may remain completely sterile for several days.

Undoubtedly French surgeons appreciated sooner than British the possibilities of primary suture in expediting convalescence and enabling men to return to the trenches within a short period of time. But our own surgeons have not been slow to follow in their steps. Colonel G. E. GASK and Captain J. T. MORRISON related their own large measure of success at the same Paris Conference, the latter especially insisting on an examination of the wound flora before the performance of suture. While this is an added safeguard it can hardly be disputed that even primary suture may be safely performed without it, and where a bacteriologist is not immediately available the patient cannot fairly be robbed of the immense advantage to be derived from the method merely on this account.

Annotations.

"Ne quid nimis."

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

WE call attention very urgently to Sir Rickman Godlee's letter, published on page 921 of this issue of THE LANCET, and bringing the claims of the Fund in a convincing manner before our readers. The Fund has done magnificent work; the need for that work is sorer than ever; surely the Fund will not be allowed to die.

THE RECENT SMALL-POX OUTBREAK IN GERMANY.

THE occurrence of epidemic small-pox in Germany is a rare event, for hitherto the majority of the population have been well protected by primary vaccination in early life and revaccination at school age, the males who undergo military training having a second revaccination on being called to the colours. A large proportion of the cases of small-pox reported in Germany have generally been foreigners temporarily resident in that country. The war has brought about certain changes in the constitution of the population of some localities by the addition of large bodies of prisoners of war and of a considerable number of people deported from the occupied territories in Belgium, France, and Russia, who are engaged in forced labour under unhygienic conditions, and many of these persons have never been vaccinated. In the latter part of 1916 a prevalence of small-pox began in Germany, the main facts of which may thus be briefly outlined:—

The infection was introduced from Russia by prisoners of war. Some of the earlier cases occurred at Hamburg, Lüneburg (in the province of Hanover), Münster (Westphalia), and Rathenow (Brandenburg), 43 miles from Berlin. From these and other centres small-pox spread over Prussia, Bavaria, Saxony, Baden, and other states of the empire. So far as can be ascertained 524 cases were reported during 1916, and in 1917, up to September, about 4000, the case-mortality rate being about 10 per cent. Thus, in the 12 months ended Sept. 30th, 1917, about 4524 cases of small-pox were notified in Germany. Comparing these figures with those of the previous 20 years, we find that the largest numbers recorded in any year were 434 cases and 65 deaths in 1908, a considerable proportion of them being foreigners. Professor Kirchner, of Berlin, who holds an official post in the Ministry of the Interior, has lately in a public speech referred to the recent small-pox outbreak in Germany and the lessons to be derived therefrom. He pointed out that of 1000 cases specially investigated 150 occurred in persons under the age of 30, and 850 in those over 30 years of age. Of the latter group 40 were in the age-group 30 to 40 years, 73 were aged from 40 to 50, 236 were from 50 to 60, no fewer than 332 from 60 to 70, and 169 over 70 and up to 92 years of age. The mortality was similarly highest in the later years of life, the exact opposite of what occurred in pre-vaccination days.

As yet there is no information published as to the number of small-pox cases and deaths among the prisoners of war and the deported people. Presumably a proportion of those attacked were Germans, and it may be assumed that these were persons past middle age whose vaccination and revaccination, performed in early life, had ceased by lapse of time to protect them. Professor Kirchner is evidently of this opinion, for he urged everyone over 35 years of age who had not been recently protected to submit voluntarily to revaccination to restore their lost immunity. He also urged the compulsory vaccination of tramps, beggars, and other wandering folk, as these had often been proved to act as carriers of the infection from

place to place. There is recent evidence to hand that small-pox has still been recurring during the present year in Germany, though not to the same extent as in 1917. Cases have been notified from such widely separated districts as Posen, Oppeln, and Breslau in the east, and Düsseldorf, Duisburg, Münster, and Essen in the west. The presence of the disease has also been reported in some of the large towns, including Berlin, Potsdam, Dresden, and Stuttgart. The *Times* has lately published reports regarding the occurrence of "black small-pox" among the employees at Krupp's works at Essen, where prisoners of war, deported people, and workers from neutral countries, along with Germans, are employed in large numbers under unfavourable sanitary conditions. The German authorities, as might be expected, have tried to minimise the gravity of the prevalence of the disease at Essen and elsewhere. The small-pox season may be regarded as having passed for the present, but a recrudescence of the disease is not at all unlikely in the autumn and winter. England has so long been free from epidemics of small-pox that many people have lost the dread of the disease and have consequently neglected vaccination, especially since the Act of 1907, which gave facilities for obtaining exemption certificates to those who had no genuine "conscientious objection," but who merely wished to avoid a temporary inconvenience to themselves. There is, in our opinion, a considerable danger of small-pox being imported into this country from abroad at the present time, and in view of the large number of unvaccinated children now existing in England the chances of a serious epidemic cannot be ignored if the disease once succeeded in gaining a footing in the country. In the circumstances it would be imprudent to postpone vaccination and revaccination till the danger has seriously developed.

INSURED PATIENTS AND EXPENSIVE DRUGS.

THE attention of medical practitioners attending insured patients in rural areas may be called to an appeal against a decision of the Hertfordshire Insurance Committee which was recently dismissed by the Insurance Commissioners. The question was raised by the London and Counties Medical Protection Society on behalf of Mr. F. C. Fisher, who, having found an insured patient to be suffering from tetanus, obtained antitetanus serum from a firm of wholesale chemists at a cost of £4 and treated him with it. The Hertfordshire Insurance Committee refused to repay the £4 to Mr. Fisher on the ground that he had contracted to supply drugs to his insured patients who lived more than a mile from a druggist, the patient in question being one of these, and, further, that he had agreed that payment for drugs so supplied should be made on a capitation basis. It was contended on behalf of Mr. Fisher that antitetanus serum was not a drug or medicine within the meaning of the Medical Benefit Regulations and of his agreement with the Insurance Committee, and that although it might be the duty of the committee to arrange for its supply the agreement entered into with him did not impose upon him a corresponding obligation. Mr. J. Smith Whitaker, who heard the appeal for the Commissioners, appears to have had little doubt as to what his decision should be, and intimated in giving it that the matter had only been gone into at a hearing on account of the importance claimed for it as affecting medical practitioners.

In substance, he held that the serum provided came within the category of what the insured person was entitled to be supplied with under the Insurance Acts, adopting the definition of a drug, when employed in any medical context, as a substance used in the compounding of medicines and of a medicine as a substance used in the treatment of disease. He pointed out that under the Insurance Act, 1911, and the Medical Benefit Regulations, it is for the insurance committee to arrange for the supply of drugs for the insured, and that in the case of those resident more than a mile from the nearest druggist the committee, if the practitioner attending the insured person so desires, may arrange with him that he shall supply all drugs—that is to say, not only those necessarily or ordinarily administered by a practitioner in person and those required immediately before a supply can be conveniently obtained from other sources. Where the arrangement is with a practitioner in a rural area to supply all the drugs required he may, if he so elects, be paid by capitation fees calculated with reference to the number of persons towards whom he assumes this liability, without restriction as to the nature or cost of the drugs actually supplied.

It was into an agreement of this kind that Mr. Fisher entered, and as he has been held without hesitation on the part of the Insurance Commissioners to have been liable to supply under it anything required by his patients, whether in the nature of a serum or vaccine or not, and independently of its cost, it would seem advisable for medical men bound by similar undertakings to consider the advisability of revising them at the earliest opportunity. Where the medical practitioner undertakes to supply in the case of a few patients all the drugs that their ailments may require he can hardly expect that the average cost incurred will always conform to the low average arrived at by examining the figures of rural areas in general. When the total number of persons in respect of whom capitation fees are paid is small, a single patient who needs expensive medicine for his proper treatment may wipe out in a few days a profit which at best can hardly be worth having, and two or three such may mean an appreciable loss. The principal regulations referred to in arriving at the decision briefly summarised above were Article 12 (1) and Article 12 (3) of the Medical Benefit Regulations, 1913, Articles 4 and 7 of the Medical Benefit Regulations, 1916, and Article 38 of the Regulations, 1913. We have every sympathy with Mr. Fisher in the circumstances: he has been fined for trying to do his best.

A CASE OF ACUTE LYMPHOID LEUKÆMIA.

THE case reported in THE LANCET of June 8th by Captain John C. Tull, C.A.M.C., is almost exactly paralleled by another reported in the *Archives de Médecine Navales* for last month. Like Captain Tull's case, this, too, ran its whole course in five weeks. All palpable glands were enlarged; there was persistent bleeding, but from the tonsils, not from the naso-pharynx; there were, on the other hand, no nodules under the skin, and there was at first no leucocytosis, but a great increase of lymphocytes up to 88·5 per cent. at last, with disappearance of polymorphs. The post-mortem findings, too, were very similar in both cases.

The patient, a French soldier, complained on Nov. 30th, 1915, when in the trenches near Abbeville, and was sent back as "observation for mumps." He ultimately reached Brest, where he was found to have great glandular swellings on each side of his neck. His tonsils also were swollen. A week later the tonsils were punctured and the wounds bled continuously for a week. Temperature also began to rise to 101° F., and patient appeared seriously ill. Enlarged glands were now found everywhere, spleen and liver enlarged, face and mucous membranes pale, a little dyspnœa, and some ecchymoses on the skin. He had on Dec. 22nd no Wassermann reaction, 4,000,000 red corpuscles, 8500 only white, of which 68 per cent. were lymphocytes. Temperature remained high and he became gradually

worse. On Jan. 3rd, 1916, the leucocytosis had increased to 19,000, and red cells had fallen to 3,000,000; the lymphocytes were 88·5 per cent., other 6 per cent. were transitional, and only 1·5 per cent. polymorphs. He became unable to feed himself and died by asphyxia on Jan. 9th. Post mortem, body anæmic and emaciated, glands enlarged, petechiæ on trunks and thighs. Pericardium contained fluid, as did the pleura. Thoracic glands much enlarged, pressing on the trachea and constricting it. Ascitic fluid in abdomen; weight of spleen, 26 ounces. Liver and kidneys enlarged. Marrow in femur soft and pinkish. The enlarged glands were packed with lymphocytes.

The case was interesting and difficult of diagnosis at first, the condition being rarely found with so small a leucocytosis.

JURIES AND WAR-TIME CHANGES.

AT a recent inquest in the City of London Dr. F. J. Waldo, in reply to a juror who asked whether juries were still necessary at inquests, made some interesting observations upon the Bill now before Parliament which deals with this subject. He explained that if the Bill passed into law as proposed, juries would still be necessary in the case of those dying in prison and in cases where murder, manslaughter, or (in the City of London) arson was suspected, and he went on to express some regret and misgiving at the prospect of losing the assistance of a jury at inquests upon many of the varieties of violent or unnatural death which he would thus have to deal with single-handed. He referred to the confidence of the public in the jury as representing the popular point of view, and while disclaiming any desire to evade the responsibilities of his position pointed in particular to inquests upon cases of suicide as likely to produce trouble for coroners obliged to decide them alone. With the reluctance of a coroner who may distress the relatives whether he finds that the deceased person was insane or that he committed *felo-de-se*, we have every sympathy, and we should regard it as not unreasonable that coroners should ask to be allowed to have juries to assist them on such occasions. The verdict of the jury when the deceased has taken his own life cannot, however, always be regarded as an example of collective wisdom arriving at true decision. "Temporary insanity" is often found to have existed without any evidence to justify what is in reality a good-natured attempt to disguise the fact that a man committed self-murder, and we must insist that it is useless that there should be any verdict or decision at an inquest of this class, or at any other inquest, unless it is to be as accurate a statement as is possible of that which has been proved by evidence. In these circumstances, while sympathising, as we have said, with the coroner's anxiety, we welcome any change likely to contribute to the accuracy of statistics as to the cause of death. We would at the same time, however, point out that the proposed alteration in the law renders it more desirable than ever that all coroners should have medical qualifications as part of their equipment. This applies to all cases of inquiry into the cause of death with regard to which it is proposed to dispense with the cumbrous and unnecessary machinery of a jury. We note that Dr. Waldo, on the occasion to which we have referred, drew attention to the raising of the age-limit for juries in all courts from 60 to 65 years, and that a juror before him who claimed to be 70 years of age proudly asserted that he was still fully able to exercise a sound judgment. With this the coroner concurred, explaining that for the purpose of inquests the 60 years limit has not been applicable. It may be pointed out with regard to this, and to the undoubted intellectual capacity of many members of the legal, medical, and other professions at an advanced age, that there are two points of view from which exemption from jury service on the ground of age may be regarded. Those enjoying it have not, as a rule, resented it as a slur upon their mental powers. They, at any rate, would probably claim it as a concession due to their having performed somewhat irksome and distasteful duties as citizens long enough.

SIMULTANEOUS AVULSION OF THE TUBERCLE AND UPPER PART OF THE SURFACE OF BOTH TIBIÆ.

IN the *Cleveland Medical Journal* Dr. J. J. Kurlander has described a curious double fracture which is of interest, not only on account of its rarity, but of its liability to be overlooked, notwithstanding the use of the X rays.

On March 5th, 1917, a boy aged 17 years was seen for loss of power in both legs. The history was that on Oct. 16th while running across the street he tripped over the curbstone and fell on his knees, which were fully flexed. He could not rise because of severe pain and inability to use his legs. Both knees rapidly became greatly swollen and painful. After several hours of hot applications the pain abated. He was kept in bed, and after two or three weeks the pain had almost disappeared and the swelling had considerably diminished. But he could not raise either leg from the bed or walk. He was removed to a hospital, where a stereo-radiogram of each knee was made and reported as negative. Only an antero-posterior view was taken. Acting on this report, he was given a pair of crutches and told that the loss of power would gradually pass off. But after five months there was only some gain of power in the left leg. On examination both knees were swollen and the joints contained fluid. There was complete inability to extend the right leg. The patella was freely movable and the lower end of the tendon was free and attached to a freely movable mass of bone as large as the patella. Fracture of the tubercle of the tibia was diagnosed. A skiagram taken laterally showed not only this, but fracture of the entire upper anterior surface of the tibia extending into the knee-joint. The fragment was drawn upward and rested against the lower end of the femur. The left knee presented a similar appearance, but with effort the patient could raise the leg from the bed and the detached bone was only slightly movable and was attached to the tibia by fibrous union. The right knee-joint was exposed by a U-shaped incision. The fragment was freed from dense fibrous and granulation tissue, and in doing so the joint was opened. The under surface of the fragment and upper surface of the tibia were freshened with chisel and curette. The fragment was drawn down and anchored to the tibia by two ivory bone pegs and the extended knee put up in plaster-of-Paris for three months. When the plaster was removed there was firm union and movements of the knee were normal. The left knee was not operated on, as it was thought that under rest the fibrous union would become stronger, which it did.

The fractures obviously differed in degree only from avulsion of the tubercle of the tibia, a lesion described in recent years and known as "Schlatter's disease."

LOUIS ALBERT DUNN.

WE have already briefly recorded the fact of Mr. L. A. Dunn's death in the private ward of Guy's Hospital at the end of a long and trying illness. There was a special element of appropriateness that a life spent in devotion to the Medical School should end within its precincts. By temperament and circumstances lacking the stimulus of keen personal ambition, his instincts lying rather in the direction of sport and country life, from the day of his appointment as demonstrator of anatomy Mr. Dunn gave himself up heart and soul to the school. It was not to him a vague abstraction but a constantly changing group of friends whose

characters and peculiarities it was his delight to study. His success as a teacher lay not so much in his knowledge of his subject, though that was thorough, as in the living personal interest which he took in everyone he taught. A friend writes of him:—

It was Dunn's custom on the first day of the session to hold a demonstration for all the new men, perhaps 80 or more in number, and without making a mistake he would address each man present by his name as the questions circulated. The crowd realised at once that to Dunn it was not a crowd but a group of individuals, and the knowledge had a salutary influence. The diffident were encouraged, the rowdy ones realised that the mantle of anonymity had fallen from them. The team was in hand. Within a week, by a series of informal talks over the dissections with hand on the dissector's shoulder, there was added to a knowledge of his name an acquaintance with his history, the name of his school, his achievements there in sport or work, and other such details never afterwards erased from Dunn's memory. The private foibles of the students were an open book to Dunn; he knew who visited the billiard saloon too often, who gambled, who drank. On one occasion he saw from his window in the College three students, well known for their idle habits, emerging from the College in suspiciously quick succession and going in the direction of a public-house. As a fourth emerged he went out and invited him in to tea, pressing on him many cups with whimsical persistence as an insurance against alcoholic thirst.

The story well illustrates Mr. Dunn's quick observation and intuition. His preference for an attitude of friendly pressure was justified by results, and in later years he sometimes alluded with just pride to the "hard cases" he had restored to the track. By his friends at the school which he served so well Mr. Dunn's achievements are not measured by the work he did, hard and solid as it was, but by the influence he exerted on generations of students.

THE annual meeting of the Medico-Psychological Association of Great Britain and Ireland will take place in Edinburgh on July 23rd and 24th under the presidency of Lieutenant-Colonel John Keay, R.A.M.C.

WE regret to announce the death of Mr. H. G. Plimmer, F.R.S., Professor of Comparative Pathology in the Imperial College of Science, a late President of the Royal Microscopical Society, and Pathologist to the Royal Zoological Society.

THE Cavendish lecture will be delivered before the West London Medico-Chirurgical Society by Major-General Sir Bertrand Dawson on Thursday next, July 4th, at 8.15, at the West London Hospital. The subject will be the Future of the Medical Profession. There will be a reception at 8 P.M. at the hospital, and the annual conversazione will follow the delivery of the lecture.

THE final report of the Health of Munition Workers Committee on Industrial Health and Efficiency has just appeared in the form of a Blue-book of 180 pages (Cd. 9065. Price 2s.). The matters with which it deals have, on account of their practical importance, all been dealt with seriatim in pamphlet form during the last 18 months, so that the final report contains nothing that is new. But it is, as we have already described it, a handbook of applied physiology which is likely to alter the whole outlook on the industrial health of the nation.

THE CONTROL OF VENEREAL DISEASES.

The American Journal of Syphilis.

THE current issue of this useful journal (Vol. II., No. 2, April, 1918) contains an article on the Diagnosis and Treatment of Syphilis in Men, by Dr. Herman Goodman (New York), based on work done at the Hudson-street Genito-Urinary Dispensary. He emphasises once again the urgent need for treatment during the "silent generalisation stage," when the spirochætes are free in the blood but no metastatic foci have had time to evidence themselves. To delay treatment of a suspected syphilitic until the Wassermann is positive he holds far more blameworthy even than the older men's motto, "Wait for the secondaries." Professor W. J. Hermann, of the New York Post-Graduate Medical School, writes of counteracting the failure of individual prophylaxis by means of "social prophylaxis"; his summing up is as follows:—

Syphilis is as easily preventable as any other infectious disease. It cannot be prevented by an appeal to individual reason, for man has counted the cost, and his knowledge has never frightened him into continence. With syphilis as an actual condition, it must be treated early if its economic consequences are to be averted. Thus the problem of syphilis to the community resolves itself into the problem of controlling early syphilis. This is the period of maximum transmissibility. The disease can be combated only by recognising it and treating it intensively at once. This places the burden squarely where it should be—upon medical schools, hospitals, and clinics. These institutions must rise to the occasion by acquiring competent teachers, physicians, and equipment. The department of syphilis must be centralised. Social service bureaus must be adequately conducted, the cases must be reported to the municipality whether by institutions or private practitioners, and finally, alien syphilitics must be excluded at our borders.

The Educational Campaign.

Presiding recently at the third annual meeting of the National Council for Combating Venereal Diseases Lord Sydenham stated that the Council now had 54 branches, including three in Scotland and one in Ulster. While the educational campaign was thus developing well the means for diagnosis and treatment required to be pressed ahead; more treatment centres were required, open for a greater number of hours. Mr. Hayes Fisher emphasised the great need for safe and convenient lodging in the form of hostels for domestic servants and shop assistants.—The subject of equal moral standard for men and women claimed the attention of the recent conference of the British Dominions Suffrage Union, at which Dr. Jane Walker and Dr. E. B. Turner took part.—At a meeting called to form a Nottingham branch of the Council Dr. John Robertson, M.O.H. for Birmingham, gave an address in which he related the extent to which lectures, both by men and women, had been developed in the works and factories of Birmingham.—Dr. David Newman gave an address on venereal diseases at a Glasgow meeting of ministers of the Church of Scotland and the United Free Church. While the medical profession was engaged in attacking disease he called upon the Church to teach that unchastity was a serious sin in itself, quite apart from the danger of contracting disease.

Legislation in Ontario.

An Act entitled The Venereal Diseases Prevention Act has been introduced in the Legislative Assembly of the Province of Ontario, providing for the examination by the medical officer of health of any person in custody or committed to prison in order to ascertain whether or not such person is infected with venereal disease, and for treatment where the disease is found to exist. Every hospital receiving aid under the Hospitals and Charitable Institutions Act must now make effective provision for the examination and treatment of persons suffering from venereal disease. Persons other than legally qualified medical practitioners are prohibited, under penalty of $100–400, from attending upon or prescribing for persons suffering from venereal disease. Advertisement of any medicine or appliance for the cure of venereal or genito-urinary disease is prohibited under similar penalty. Spreading infection on the part of one who knows or has reason to believe that he is infected with venereal disease is made an offence punishable by heavy fine or imprisonment. Procedure is that of the Summary Convictions Act, except that proceedings are conducted *in camera*. The Act comes into force on July 1st next.

GALVANOMETRIC OBSERVATION OF THE EMOTIVITY OF A NORMAL SUBJECT (ENGLISH)

DURING THE GERMAN AIR-RAID OF WHIT-SUNDAY, MAY 19TH, 1918.

BY A. D. WALLER, M.D., F.R.S.

A. M. W., a lady of middle age, of an equable temperament, with whose degree of emotive excitability I have become familiar by many previous observations, was the subject of the following observation during the afternoon and evening of Whit-Sunday, May 19th, inclusive of the period from 11 P.M. to 1.30 A.M., which was the time occupied by the raid on London by a considerable fleet of German aeroplanes.

A. M. W. was connected with a recording galvanometer during the day, so that her state of emotivity at the time was well ascertained. She remained on the wires during the evening from 10 P.M. to 2 A.M.; warning (by maroons) occurred at 11 P.M. and the end of the raid was sharply indicated by a second warning (by siren) at 1.30 A.M.

The experimental conditions of observation were therefore as perfect as possible, the subject sitting at rest in an arm-chair connected with a recording galvanometer reading a quiet book, with a key fixed to the arm of the chair by which she could signal any remarkable occurrence.

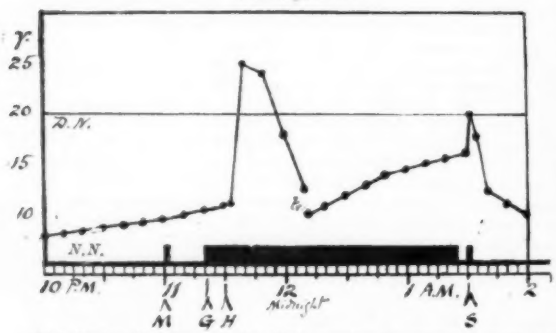
The reactions of A. M. W., taken at 4 P.M., were as follows:—

Conductivity = 14 γ (R = 70,000).

Response to threatened pin-prick	+1·4 γ
,, real ,, ...	3·6
,, threatened burn	2·0
,, real ,, ...	6·0

Her emotivity during the air-raid period—from 11 P.M., first warning (M.), to 1.30 A.M., second warning (S.)—is shown in the following graph, in which her conductivity

Emotivity of A. M. W. during the Air-raid on Whit-Sunday, 1918.



M indicates the time of the first warning by maroons at 11 P.M. G indicates the commencement of gun-fire. The duration of the disturbance was from 11.20 P.M. to 1.30 A.M. H marks the moment of maximum alarm, when the swelling hum of approaching aeroplanes was most audible. S indicates the second warning by siren at the termination of the disturbance. The electrodes were transferred from the left to the right hand at 12.5. The horizontal lines D.N.–N.N. indicate the average normal day and night conductance of A. M. W., ascertained from other observations.

readings at ten-minutes' intervals have been plotted from the records. The most interesting portion of the period between 11 and 11.30 is herewith reproduced; it shows, firstly, the effect (slight) of the warning maroons; secondly, that (also not considerable) of our anti-aircraft guns; and thirdly, the relatively considerable effect of the increasing humming sound made by presumably approaching German aeroplanes. As can be seen on the record, the intermittent noise of our guns, noise made by a presumably defensive agent, gave little response. The growing hum caused by a presumably offensive agent produced a relatively large effect with a delay of about three minutes, during which the humming grew to its maximum intensity. This period was punctuated by two distinct explosions that shook the ground, inclusive, of course, of the galvanometer, the spot being shaken off scale; but these brief interruptions did not interfere with the regularity of the record nor produce any reaction of the subject beyond her general response.

Remarks.

The observation is instructive in several respects.

The mental attitude of A. M. W. affords in my judgment a very fair illustration of the sane and sound attitude of an English population in presence of this latest development of German mentality which is calculated ("miscalculated" from our standpoint) to produce terror. The subject was, in fact, alarmed but remained completely self-possessed, showing none of the ordinary external signs of emotion. She reacted only by the palms of her hands, which exhibited by the galvanometer a normal physiological response significant of fully controlled emotion. She understood the meaning of the various noises heard, and reacted only to such noises as indicated real possibility of injury, such as the increasing hum of aeroplanes; she also reacted to some extent to the second warning signal by siren, which excited surprise and therefore some degree of apprehension associated with novelty; there was no appreciable response to the first warning signal by maroons, nor even to noises that were accompanied with evident earth tremor and therefore attributed to exploding bombs. (N.B.—A. M. W. does not share the fear of thunder and lightning experienced by many over-excitable persons. The fact that she remained perfectly quiet and self-possessed during two hours of considerable noise may in itself be taken as a satisfactory proof of equanimity. The electrodes were transferred from left to right hand just after midnight by reason of normal physical fatigue.)

My previous knowledge of the normal responses of A. M. W. and of her normal diurnal waxing and waning of excitability has enabled me to mark upon her chart what I regard as being the normal levels of her palmar resistance during the day and during the night. The full discussion of this diurnal phasing is reserved for a future occasion, when I hope to give the results of systematic observations of this periodicity on various persons. I allude to the fact itself now in order to call attention to the actual values of these normal levels in terms of the electrical resistance of the palm of the hand. These are for A. M. W. approximately 5 and 20 γ, or 200,000 and 50,000 ohms respectively—i.e., the values are enormously in excess of the values usually assumed to exist in clinical tests of the human subject by constant currents. In this case the testing current is supplied by two Leclanché cells only (= 2·8 volts), whereas in a clinical examination the resistance when taken is taken with voltages that produce considerable electrolysis and indefinitely falling resistance. In my own case the day and night levels (maximum and minimum) as a result of systematic observations for 10 day and night periods are 8 and 90 γ respectively, or approximately 125,000 and 11,000 ohms.

By reason of this diurnal variation of resistance I have adopted the practice of making first tests as far as possible during the afternoon; in any case the time of day when a test is taken should be noted.

The principal practical advantage of the palmar test of emotivity is that the results are entirely uncontrollable by voluntary effort. They are independent of the ordinary signs of emotion, which may or may not be suppressed. The galvanometric signs of palmar change are especially well marked in the case of suppressed emotion.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending June 22nd:—

	£	s.	d.
Dr. James Craig	2	2	0
Dr. C. C. Easterbrook ...	1	0	0
Dr. Thomas Guthrie ...	2	2	0
Mr. Percy Hoar*	200	0	0
Mrs. Harrison†	5	0	0
Mrs. de Meray*	0	5	0
Dr. T. M. Cuthbert ...	1	1	0
Dr. W. A. Bond	2	2	0
Anon	0	17	6

* Per Dr. Des Vœux. † Per Sir Rickman Godlee.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

INTER-ALLIED CONFERENCE ON THE CARE OF DISABLED SAILORS AND SOLDIERS.

(*Concluded from p. 883.*)

THE EXHIBITION.

AN exhibition at the Central Hall, Westminster, was an important feature of the Conference. The Governments of our Allies—France, Italy, and Belgium—had evidently been at considerable pains to send over typical exhibits. The display made by the Dominions gave evidence of excellent work, both medical and educational; while the work done in the United Kingdom was represented chiefly by hospitals and voluntary societies. Credit is due to the honorary secretary of the exhibition, Mr. Henry D. Roberts, for arrangement of the exhibits at Westminster (May 20th–25th) and subsequently at the Memorial Hall, Farringdon-street (June 1st–15th). Cardiff and other provincial centres are now being visited.

The exhibits were in general of two kinds:—

(1) A great variety of work done by disabled sailors and soldiers, either of a remedial or a profitable character.

(2) Appliances for treatment and relief of disablement with record of the results achieved.

We shall deal here chiefly with appliances, adding that many of these come under both categories, as the disabled men largely produce the appliances for their own treatment.

French Exhibits.

The French exhibits included many useful aids for injured arms.

Splints.—Professor VILLARET, of Montpellier, showed an *apparat primitif*, a light cheap splint, which does not fill the palm or obstruct the movements of the hand.

Intended for permanent use by men unsuitable for operation, the apparatus of M. CATTEAU, made in the workshops of the Hospital de Grand Palais, attracted considerable attention. A practical comment on its usefulness was the fact that a corporal in attendance at the exhibition, who had not been able to write since 1914 on account of musculospiral paralysis, on putting on the apparatus for the first time was able to write at once. This apparatus is especially adapted for light work; the strong and simple apparatus of Dr. Cousin, of Tours, appears more useful for heavy work.

An apparatus for ulnar paralysis was included in the French exhibit. No satisfactory apparatus for use in median paralysis seems yet to have been devised. A surgeon from one of the Dominions described the median as "a pig of a nerve" after suture.

Agricultural Prosthesis.—The genius displayed in the appliances of M. LABARTHE, of Montpellier, is in keeping with the renown of this ancient seat of medical learning; the instruments have stood the test of time. The chief aim at Montpellier is to fit men for agricultural work. The *godet articulé*, a long socket and stirrup for fitting over the end of a spade, enables a man to dig; a ring bevelled with an oblique shoulder allows him to hold the handle of a scythe or pitchfork. The set of appliances is complete and comprises aids for all kinds of work; there is a strong grip tool for mechanics made with two claws and a *pince godet* with a socket for holding the handle of tools, such as a hammer; another form of *pince godet* enables a man to use a file or saw. A light very modified *pince* with a wooden socket bucket is designed to hold the handle of a chisel or screw-driver. M Labarthe has designed a simple clamp to be used with a *godet* to enable a man to drive a motor-car or ride a bicycle; when necessary the man's arm can be rapidly freed from its attachment to the driving-wheel or handle-bar. At Montpellier disabled Russian soldiers are being taught as well as Frenchmen.—The Centre d'Appareillage of Lyons showed an appliance fitted with a spring serving to deaden the shock when the amputated man is working with a hammer and the like. A very modified *pince godet* shown must be very useful to mechanics for holding tool handles.—The leather gauntlet of M. JOURNEL, fitted with a strap which takes the place of the missing fingers, enables a man with the loss of the first two or three fingers to hold tools. By using an ingenious arrangement, the *aimant porteclou* (a mounted magnet), a man can hold the point of a nail in position at the beginning of hammering.—"Le Cultivateur" of M. JULLIEN is a strong *godet*, holed for lightness, which fits over the end of most agricultural implements; a Hook's joint permits of movement in both horizontal and vertical directions.—"Le Laboureur" of MM. GILLET and DURILLON is another form of *godet* with longitudinal slits, the apertures being fitted with springs arranged in the same direction; this appliance enables a man to hold the handle of the plough and allows of the automatic release of the handle in case of accident. Its use is illustrated by an excellent photograph. "L'Agriculteur" enables a man to hold an agricultural implement at any point of the shaft; it is a *godet* with the bottom removed.—A useful little appliance is a *pince à repiquer* with which a man can set plants. A strong modified *sabot* fixed at the end of an artificial limb enables a man to walk over ploughed land without sinking in, as he would with a peg-end. On one of the stalls was the well-known *bras de travail* of Gillet, made with a panelled aluminium bucket and fitted with an artificial elbow.—Dr. COUSIN showed a strong but light steel *bras de travail* fitted with an *amortisseur* (a steel spring which deadens the shock), and his modification of Dr. Boureau's ring for holding tools; this useful appliance is for amputations above the elbow.—The *porte outil* of M. RIPERT, of the Centre d'Appareillage of Paris, to be fitted on to the end of an artificial limb, has the advantages of being sufficiently strong, light, and easily adjusted. He showed a modified hook, an artificial thumb and crooked adposed index finger; the hook gripped tightly when a stick was placed between the artificial thumb and finger and an attempt made at withdrawal.

A number of *bras de parade* were shown; a Frenchman wittily remarked they would make excellent presents. Although this is true within limits, they are probably useful for light work. The ordinary position of the fingers of an elegant arm was one of flexion; they were extended by a backward movement of the opposite shoulder, a cased Bowden brake wire serving as intermediary; flexion of the forearm was brought about by a contraction of the muscles of the chest pulling on another similar wire. With this arm a man can perform all the movements required in dressing, drinking and eating, and he can attend to his natural wants.

Wall Cards.—The wall cards gave clear accounts and illustrations of the work carried on at various institutions; one gave photographs of the work at St Maurice; an exceptionally well-got-up card similarly illustrated the work of the Chambre Syndicale de la Bijouterie, Paris, where 130 men have been taught the trade, 70 of whom are now employed by the establishment. Another card showed work in glass-blowing provided by the Fondation Marcel Hirsch being carried out by limbless men and war widows; this institution specialises in laboratory glassware. Another card conveys the information that the Franco-American Committee have arranged classes in commercial subjects, languages, and music for blind men who intend to take up teaching.

On a stall near by was a useful article made by the Société de l'Assistance pour les Avengles for teaching men both blinded and deafened the use of Braille; on a circular disc revolving on a screw are figured in raised characters the Bráille alphabet and the ordinary punctuation marks and numbers. Not far from this were books for blind masseurs and priests published by an establishment in Paris. Several photographs represented blinded soldiers engaged in pottery work at the Manufacture Nationale de Sèvres.

The use of the articles in the French exhibit was clearly displayed in various ways, such as by photographs or fitting on to plaster casts of limbs. The labelling of the appliances from Tours was exceptionally good; the labels were made of parchment and the description clearly written in manuscript characters. Even the artificial limbs were given an adventitious elegant appearance by their artistic grouping on the stalls.

Italian Exhibits.

The Italian exhibit was perhaps visited more than any other; Professor PUTTI was indefatigable in demonstrating both his own work and that of his colleagues. The different forms of kinematic amputations were made clear by photographs, plaster casts, and a display of the appliances used at the time of the operation and subsequently; an album illustrates the stages in the various forms of operations and the end results. Two flesh-coloured artificial lower limbs made of wood were shown, one with a pelvic bucket; they were very light, the curvature of the tibia was correctly reproduced,

and the finish of the whole article wonderful. The Opera d' Assistanza, Villa Mirafiori, Rome, sent a strong light artificial *bras de travail*, the bucket of which is made of segments of a cylinder joined by longitudinal bands; the false elbow, a ball and socket-joint, is completed by a large circular nut with three flanges.

Professor GALLEAZZI, of Gorla Prima, Milan, exhibited an artificial arm for the lower amputations of the forearm; by rotating his radio-ulnar joint the patient can open and close his hand.—A simple clip for holding light articles was included in the exhibit of the Piedmontese Committee and a strong *pince universelle* of the duck-bill type capable of holding articles of six sizes. The stem of both these appliances is of wood, adding to their lightness and reducing the cost.—The Italian apparatus for musculo-spiral paralysis partakes more of the nature of a glove; the obliquely placed wires holding up the loops into which the fingers are inserted are very strong.—A practical set of wood-working instruments for the blind were sent by the Blind Institute, Milan. Of these tools, the dovetailing guide is much admired by practical men with an expert knowledge of the work.

Belgian Exhibits.

The Belgian exhibit illustrated the work done at l'Ambulance de l'Ocean, La Panne, 10 kilometres from the Nieuport front, the Hôpital de Bonsecours (Rouen), Port Villez, and Ste. Adresse. Dr. STOUFFS (Bonsecours) showed an apparatus for producing passive movement by inflation of stout rubber bags. The articles made by disabled men at Port Villez and Ste. Adresse are wonderful; for workmanship, taste, and beauty of design they cannot be surpassed; ingenious brushes, furs, pottery ornamented by beautiful natural designs, furniture, ornamental ironwork—all are admirable.

Serbian Exhibits.

The Serbian Red Cross stall showed specimens of the work of disabled Serb soldiers. The articles are made at the workshop at Salonika, opened by the Serbian Government for the employment of the disabled, and are remarkable both for variety and for imaginative faculty displayed. Pieces of projectiles have been used in the making of objects, such as water-bottles, knives, inkstands, cigarette-holders, many of them delicately carved, while excellent colour effects are produced by the skilful blending of different metals and by the artistic insertion of metals into wood. Musical instruments are another striking feature; they include violins fashioned from the most unpromisingly rough materials, and a native tambouriza made of tortoiseshell and carved wood and ornamented with Bulgarian shrapnel. There are also a number of hand-made baskets and basket-work bottle-holders. It is, indeed, highly creditable to our Serbian allies that men whose occupation is almost exclusively agricultural should be able to turn out work at once practically useful and of artistic merit. Dr. VLADISLAV STOKTITCH, of the Serbian Sanitary Service, tells us that the question of disabled soldiers is a very complex one for Serbia. They are scattered in widely separated areas—namely, on the Salonika front, at Corfu, in Northern Africa, France, Serbia itself, in addition to thousands of disabled prisoners of war in enemy hands. Up to date groups of disabled men have been distributed in Salonika, Corfu, Byzerta, Toulon, and Lyons, the necessary equipment, including artificial limbs, being generously supplied by the French. France is also providing means of re-education, the majority of disabled men becoming efficient agricultural workers. In France alone 1600 have already received an agricultural training, while good results have also followed professional and industrial courses.

Dominion Exhibits.

Canada.—The exhibit of work from the military hospitals and training centres in Canada came near to the standard set by Belgium. It included articles made by men at the bedside, during convalescence, and during re-education. A model of a hand-loom used for weaving at the bedside was shown and a beautiful silk scarf woven by a man formerly a train-driver. A hat made in bed by an ex-lithographer, woven, sewn, and trimmed with paper beads, had quite a *chic* appearance. Examples of work done during convalescence included a gramophone cabinet and hand-sewn boots. An ex-bricklayer, who had been gassed, had, after four months' re-education, learnt to be an architectural draughtsman; his drawings are exceptionally good. A very workmanlike exhibit is the dental work of an ex-machinist after three months' training; he was suffering from a gunshot wound of the left hip.

The training centre at McGill University, Montreal, showed many examples of fine lathe work, both small hand-tools and bigger work, such as gear-cutting. Of the Canadian hospitals in England, the Granville Hospital (Buxton) showed a dinner-wagon made by the patients for use in the wards, a combined chair and steps for a library, and some good carving. Striking exhibits from the Military Hospital, Orpington, are in the form of wax models of facial injuries before and after treatment.

Australia.—The best work done by the Australian men was the wood-work; useful meat-safes are shown and a bed locker which combines the features of a locker, bed table, and reading stand.

New Zealand.—The chief features of the New Zealand exhibit were the display of clerical work by one-armed men, wool-classing, and armature winding. A man with his left arm amputated above the elbow and with four fingers off at the knuckle, after four months' training, was able to write 100 words of Gregg's shorthand in a minute. While type-writing he depresses the keys with his thumb; the space bar he depressed with his foot by means of a piece of string. When writing he wears a glove with a piece of stiff leather in the place of the index finger. Wool-sorting is being carried on by a man with an amputation at the shoulder-joint.

The British Section.

In the British section the most prominent exhibit was that of the *Shepherd's Bush Military Orthopædic Hospital*. The work of the staff and the products of the curative workshops are well displayed and demonstrated. An admirable series of plaster casts taken before and after treatment gives an unbiassed and convincing record of the value of skilled team-work. In this hospital as many men as possible are employed in making appliances and helping in the work of the institution generally. A considerable economy is effected, and the surgeons are able to get exactly what they want and get it quickly. Splints of all kinds are shown, especially calliper and cock-up, but an Abbot's plaster frame and Balkan frames for the treatment of fractures of the lower extremity, all made by the patients, are also on view. An oil painting by Mr. F. A. BIRD, R.A., illustrates Major Sinclair's arrangement for treatment of fractures of the lower third of the leg; it shows clearly the manner in which Captain Padwick has applied Sinclair's footpiece to Thomas's splint converted into a modified Hodgen, the whole being slung to a Balkan frame.

A valuable feature was the display of the Erskine provisional artificial limb and pin-leg, useful especially for amputations of the thigh. The gain is two-fold: the stump is enabled to participate early in the act of walking, leading to improvement of the local condition, while at the same time the general condition of the patient is improved both physically and mentally. A description of this appliance appears on p. 910. The work of the *Erskine Research Laboratory*, in connexion with the Princess Louise Scottish Hospital for Limbless Sailors and Soldiers, represents an experiment in the standardisation of artificial limbs; if a part is damaged it can be replaced from stock at Erskine House. For amputations of the upper extremity Williams's artificial arm is the one employed. This is fitted with a modified hook and several other devices, all strong and simple; it has been used in "picking and delving." The work of the vocational classes at this hospital is obviously good and the instructor of the carpentry section a man in the right place.

Valuable work on behalf of the disabled man is being done at *California House*, Lancaster Gate, for Belgian soldiers, and at *Kitchener House*, Cambridge Gate, for Imperial troops, where men are carried to and fro from hospital. These clubs help to keep the man's spirit alive; they stimulate his mind and give him an idea of what he may be able to do, however disabled. A striking exhibit was a book bound by a man before he was able to leave his wheel-chair. Basket-making is being taught at Surbiton by the Comité des Visites aux Blessés Belges, who have also found employment for 1150 wounded Belgians.

The exhibit from *Queen Mary's Workshops* at the Brighton Pavilion Hospital was a model display. The work is of a preliminary character, and aims at getting the man into the right frame of mind. When he goes on to Roehampton he is able to continue the occupation commenced at Brighton.

Mr. Baker follows the after-career of his men and can point to striking discoveries of undeveloped talent. Some of the men, unskilled workers before the war, are able to take up skilled work at a considerably higher wage.

Croydon Education Committee exhibited the work of their disabled soldiers' class in electrical engineering (installation and maintenance work). The piping for containing wires was cut and jointed by a one-armed man without help. The Vale of Clwyd Rural Industries put in a useful exhibit; they have been making toys since 1909, and have now opened a furniture department for reproducing old Welsh designs and repairing old furniture; a hostel for 20 men is attached. The primary aim is to enable men to return to their own homes in the country, trained and able to earn their own living, but arrangements will be made for men wishing to remain in Trefnant by the Welsh Town Planning and Housing Trust, Limited, of Cardiff, which has instituted training in market gardening at Wrexham Garden Village and Green Farm, near Cardiff. Agricultural work is also provided at the Vanguard Farm, Sutton Valence, Kent, on the co-operative system. Afforestation is one of the chief aims of the Industrial Village Settlements, inspired by Mr. Mawson.

VISITS OF THE DELEGATES.

Roehampton.

An instructive visit was paid by the foreign delegates to Roehampton. On arrival the workshops were first visited. In the boot-making shop men with amputation of the thigh were working without any special appliance fitted to their stumps; in the electric fitting shop were one-armed men being trained for switch-board work. Most of the men in the joinery shop were doing light carpentry, a cupboard being one of the heaviest articles made; men with short thigh stumps were seated at work on high stools; a man with his left arm off 3½ inches from the shoulder was working away well; a man who had lost his right hand had made an excellent wooden electric-light stand. In the fitting and turning shop a man with an amputation above the knee fitted with an artificial limb was turning up a spindle; a man with a thigh amputation, seated on a stool, was boring an acme wheel for the revolving plate of a crane. The instructor was using a partially dismantled motor-car to demonstrate the working of the engine; some of the men had been promised work as chauffeurs, and others as motor-tractor drivers; yet others hoped to get work as motor fitters.

Passing out into the grounds the delegates were shown a number of artificial limbs supplied to the men, and their use was demonstrated by patients and ex-patients. Some of the men who had passed through Roehampton were being employed by the artificial limb making firms. Criticism was freely expressed that the artificial arms were expensive and rather elaborate. A man with an amputation of the forearm 3 inches below the elbow was using a worker's arm for heavy work—swinging a heavy hammer and bringing it down with precision on a block of wood; the arm, although somewhat elaborate, stood the strain. British artificial arms appear to be still in the experimental stage. A Frenchman with a double amputation of the upper extremity fitted with a French arm was performing various feats; the only things he could not do for himself were to lace his boots and fasten his tie. The artificial legs were the subject of less adverse comment; a man with his right leg amputated 2 inches below the knee and the left thigh with a stump measuring 8 inches from the perineum was walking with the aid of a stick; he had a slight limp only on the left side. A youthful patient standing by was much encouraged by this feat. "If I can walk as well as that I'll be all right," he said.

St. Dunstan's.

St. Dunstan's was also visited; of its thoroughness a satisfactory impression is at once given. The porter is a man who cannot be employed at any other work; his right arm is off and he has only a very short stump, which prevents him from doing any manual work. Another of the male staff had had the head of his right humerus excised and was unable to abduct his arm. On entering the main buildings a notice is seen asking visitors to keep off the linoleum tracks to avoid obstructing the patients. When a man is on the linoleum track he knows he is in safety; carpet is the danger signal. In the lounge are seen V.A.D. and St. John Ambulance nurses chatting to the patients, some of whom are playing dominoes, with the dots raised instead of depressed. A man is reading a Braille translation of an Egyptian tale, "Mansoor," an excerpt from "Corporal Jacques of the Foreign Legion," by H. De Vere Stacpoole, published by the National Institute for the Blind. A Lancashire man, a professional musician before the war, comes in after his lesson in Braille shorthand typing. He says it was "a bit rough at the beginning," but is getting on with it all right now. Men who have passed the type-writing test were writing letters to their friends; those who have not yet reached this stage write letters in a novel blotter which when closed enables them to write through the empty frame which constitutes the front page, the pencil being guided by lines of string. The dispensary and well-equipped consulting-room are the charge of a trained sister from Guy's Hospital; there are two other trained sisters in the main building, two at the bungalow, and two at the cottage. Each of the three houses possesses a separate sick-room; there is, in addition, an isolation block containing 20 beds for patients and members of the staff. The patients when they require ophthalmic and other operations are sent back to hospital, but some amount of general medical and surgical treatment is required. The old regular suffers from malaria, men of the new army from trench fever; some of the men are minus a limb. A room is provided for electrical treatment. In the quartermaster's office are the knitting frames. The delegates passed the outer lounge for dancing and concerts, and the chapel, to reach the teaching part of the institution. In the vicinity of the workshops the men during the early part of their training use a handrail for guide, the rail has a small knob in places to remind them when they are near danger spots where collisions might take place. In the workshops serious work is going on; visitors are requested not to talk to the workers so that their minds shall not be taken off their work. In the Braille room ladies who have had to learn Braille themselves are now teaching it; an Australian is studying a Braille machine which will enable him to write it. In the netting room nets of all kinds are made. A garden arch shows one of the ways in which sweet peas may be trained to climb—by means of a net. This is a spare-time occupation; the men practise netting while listening to concerts. In the boot-repairing shop one of the men was knocking nails into boots; he handled the tools deftly and was able to put out his hand to pick up the nails quickly and in a confident manner. The best work in the basket-making room was the making of hampers for laundry work and theatrical accessories; linen bedroom baskets and butchers' baskets were among the most profitable productions. A man making hollowed-out doormats used a large packing-needle with every assurance; the making of cokernut mats with a hand-loom involves the use of a knife and hammer, but the men exhibited no hesitation or appeared in any way to be at a loss. Telephone operating is also taught; the men are able to work the drop-shutter system of exchanges in offices and business establishments. In a workshop attached to the poultry farm the blind men make special coops where poultry are kept for fattening. Last, but not least, is a separate department which attends to the men's settlement and after-care. Officers are housed in two houses in Portland-place, whence they come to St. Dunstan's for teaching. Most of the pupils learn Braille and type-writing; some of the officers as well as the men are learning massage and poultry work. At Ilkley (Yorks) is an establishment for men who besides having lost their sight are for other reasons incapable of carrying on in every-day life. St. Dunstan's and its annexes contain about 580 men. Up to March, 1918, 434 men had passed through the institution. Of this number 90 per cent. have been fully trained and set up in profit-earning occupations.

KINEMATOGRAPH FILMS.

During the exhibition a kinematograph was installed in the large hall, and daily exhibitions were given from 2.30 to 7.30 P.M. of films supplied by the different countries exhibiting at the conference. The apparatus was also used by readers of papers in the meetings of the Surgical Section. Major Hurst exhibited an interesting film relating to the treatment of neurasthenic patients at the Seale Hayne Military Hospital. Pictures were shown of the men before and after three months' treatment at Netley. Special attention was drawn to the farm work at Newton Abbot, and a film showing men in the fields and at military drill and various games was exhibited. A film of the

Pilkington Special Orthopædic Hospital at St. Helens was exhibited by Dr. James Kerr, who explained the work of the hospital, and especially dealt with the system of recording the improvement of patients; he stated that the men were greatly encouraged by watching the progress shown upon the records. An illustrated lecture on bee-keeping for disabled men was delivered by Mr. H. Steven, of the Erskine Hospital, Glasgow. Allusion has already been made to the films showing the Italian method of the treatment of the stump in arm operations.

The British films, shown chiefly by Mr. A. B. Malden, included pictures of Roehampton, Brighton, the training workshops for diamond cutting and polishing, the Prince of Wales's Hospital, Cardiff, St. Dunstan's, and the hand-loom weaving of "Blighty" cloth at Gorgie, near Edinburgh, where the factory is being staffed entirely by disabled soldiers, who are now being turned into expert weavers of cloth. Films were also shown of the Lord Roberts Workshops and Golders Green Home of Recovery.

The French films included some remarkable pictures of what has been accomplished by fitting artificial limbs to men with double amputations by Dr. Gourdon, of Bordeaux. The work of Canada for disabled men was explained by Major McKeen by means of films well in keeping with the rest of the Canadian work.

GENERAL IMPRESSIONS.

The impression gained by a visit to the Conference and Exhibition was that they had adequately served their purpose of achieving an exchange of knowledge and views among those chiefly concerned in promoting the welfare of the disabled men of the Allied Armies. Our French allies, owing to the existence of large trained forces, were before us in the field of remedial treatment, and have much which we can study and apply with advantage to our own conditions. The Italian work shows originality and thoroughness, while the Belgian work is almost beyond praise. Belgium had, of course, in its occupational training the experience of Charleroi to draw upon; how well it has been utilised the exhibition of the work from Port Villez and Ste. Adresse shows. Our Dominions have also been able to teach us lessons, but there is now every indication that although we in this country started late we shall not allow ourselves to be beaten in friendly rivalry on behalf of disabled fighting men.

URBAN VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING MAY, 1918.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4·1 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4·8, 4·9, and 3·9 per 1000. The lowest rates in May were recorded in Kensington, Chelsea, St. Marylebone, Hampstead, Holborn, and the City of London; and the highest rates in Bethnal Green, Stepney, Southwark, Bermondsey, Deptford, and Greenwich. Three cases of small-pox were notified during the month, against 5, 21, and 4 in the three preceding months; of these, 2 belonged to Stepney and 1 to Islington. The cases of small-pox under treatment in the Metropolitan Asylums Hospitals at the end of the month numbered 3, against 5, 30, and 13 at the end of the three preceding months. The prevalence of scarlet fever was about equal to that in the preceding month; this disease was proportionally most prevalent in Finsbury, Southwark, Bermondsey, Lambeth, Battersea, Deptford, and Woolwich. The Metropolitan Asylums Hospitals contained 786 scarlet fever patients at the end of the month, against 961, 931, and 898, at the end of the three preceding months; the weekly admissions averaged 129, against 111, 132, and 105 in the three preceding months. The prevalence of diphtheria was about equal to that in the preceding month; the greatest proportional prevalence of this disease was recorded in Paddington, Shoreditch, Stepney, Bermondsey, Deptford, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1665, 1529, and 1358 at the end of the three preceding months, numbered 1232 at the end of May; the weekly admissions averaged 202, against 211, 182, and 143 in the three preceding months. The prevalence of enteric fever was about equal to that in the three preceding months; of the 36 cases notified in May, 6 belonged to Wandsworth, 5 to Islington, 3 to Camberwell, and 3 to Lewisham. There were 32 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 28, 23, and 23 at the end of the three preceding months; the weekly admissions averaged 5, against 5, 3, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in Paddington, St. Pancras, Stoke Newington, Shoreditch, Bethnal Green, Southwark, and Deptford. The 18 cases of puerperal fever included 4 in Hackney, 4 in Wandsworth, 3 in Woolwich, 2 in Stepney, and 2 in Lambeth. Of the 22 cases of cerebro-spinal meningitis, 4 belonged to Hammersmith, 3 to

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MAY, 1918.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.								Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,026,901	3	527	786	—	36	—	18	176	22	8	1576	4·1	—	252	8	44	233	5	48	590	1·5	5306	13·7
West Districts:																								
Paddington	122,507	—	8	33	—	1	—	—	8	—	—	50	4·3	—	8	—	1	5	—	1	15	1·3	161	13·7
Kensington	151,536	—	11	18	—	—	—	—	8	—	—	37	2·5	—	—	—	—	4	—	3	7	0·5	169	11·6
Hammersmith	114,952	—	17	24	—	1	—	—	2	4	—	48	4·4	—	10	—	—	4	—	2	16	1·5	129	11·7
Fulham	145,186	—	13	26	—	—	—	—	5	3	—	47	3·4	—	15	1	1	10	—	2	29	2·1	186	13·4
Chelsea	57,368	—	4	1	—	1	—	—	2	—	—	8	1·5	—	3	—	—	3	—	—	6	1·1	92	16·7
City of Westminster	122,046	—	10	18	—	2	—	—	4	—	—	34	2·9	—	1	—	1	1	—	1	4	0·3	146	12·5
North Districts:																								
St. Marylebone	92,796	—	7	9	—	—	—	—	4	—	—	20	2·2	—	—	—	—	5	1	2	8	0·9	121	13·6
Hampstead	75,649	—	3	6	—	2	—	—	2	—	—	13	1·8	—	—	1	—	3	1	—	5	0·7	69	9·5
St. Pancras	186,600	—	21	38	—	3	—	—	12	1	1	75	4·2	—	4	1	4	20	—	4	33	1·8	275	15·4
Islington	297,102	1	36	60	—	5	—	—	12	—	—	114	4·0	—	12	—	1	19	2	2	36	1·3	406	14·3
Stoke Newington	47,426	—	4	11	—	—	—	—	3	—	—	18	4·0	—	2	—	1	2	—	—	5	1·1	53	11·7
Hackney	196,598	—	10	30	—	2	—	4	6	1	1	54	2·9	—	7	—	4	9	—	2	22	1·2	245	13·0
Central Districts:																								
Holborn	35,303	—	3	5	—	—	—	—	—	—	—	8	2·4	—	1	—	—	1	—	—	2	0·6	55	16·2
Finsbury	68,011	—	19	10	—	—	—	—	1	1	—	31	4·8	—	—	1	1	8	—	—	10	1·5	123	18·9
City of London	16,138	—	2	1	—	—	—	—	1	—	—	4	2·6	—	—	—	—	—	—	—	—	—	28	18·1
East Districts:																								
Shoreditch	89,675	—	8	23	—	—	—	—	11	—	—	42	4·9	—	3	—	—	15	—	2	20	2·3	128	14·9
Bethnal Green	107,362	—	18	22	—	2	—	—	12	1	1	56	5·4	—	20	—	—	14	—	1	35	3·4	173	16·8
Stepney	232,010	2	23	81	—	—	—	2	11	—	2	121	5·4	—	22	—	3	16	—	6	47	2·1	344	15·5
Poplar	143,443	—	16	18	—	—	—	1	9	—	—	44	3·2	—	9	—	2	6	—	1	18	1·3	197	14·3
South Districts:																								
Southwark	167,936	—	48	33	—	2	—	1	13	1	—	98	6·1	—	28	—	3	19	—	3	53	3·3	319	19·8
Bermondsey	107,635	—	19	44	—	1	—	—	5	1	1	71	6·9	—	22	1	4	4	—	1	32	3·1	183	17·7
Lambeth	272,038	—	49	39	—	—	—	2	4	3	—	97	3·7	—	32	—	4	14	—	2	52	2·0	367	14·1
Battersea	150,023	—	27	18	—	—	—	—	6	1	1	53	3·7	—	17	—	—	10	—	2	29	2·0	182	12·7
Wandsworth	300,787	—	43	52	—	6	—	4	6	1	1	113	3·9	—	7	—	2	8	1	6	24	0·8	306	10·6
Camberwell	239,461	—	32	68	—	3	—	1	8	2	—	104	4·5	—	15	—	6	14	—	2	37	1·6	309	13·5
Deptford	103,527	—	19	35	—	—	—	—	7	1	—	62	6·2	—	6	—	1	2	—	—	9	0·9	107	10·8
Greenwich	90,440	—	15	25	—	2	—	—	4	—	—	46	5·3	—	3	—	3	10	—	—	16	1·8	132	15·2
Lewisham	161,405	—	15	30	—	3	—	—	2	—	—	50	3·2	—	—	2	2	3	—	1	8	0·5	163	10·5
Woolwich	131,942	—	27	17	—	1	—	3	8	1	—	57	4·5	—	5	1	—	4	—	2	12	0·9	138	10·9
Port of London	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

Fulham, 3 to Lambeth, and 2 to Camberwell; while of the 8 cases of poliomyelitis 2 belonged to Stepney.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ended June 1st the deaths of 5306 London residents were registered, equal to an annual rate of 13·7 per 1000; in the three preceding months the rates had been 16·8, 18·1, and 17·1 per 1000. The death-rates in May ranged from 9·5 in Hampstead, 10·5 in Lewisham, 10·6 in Wandsworth, 10·8 in Deptford, and 10·9 in Woolwich, to 16·2 in Holborn, 16·7 in Chelsea, 16·8 in Bethnal Green, 17·7 in Bermondsey, 18·1 in the City of London, 18·9 in Finsbury, and 19·8 in Southwark. The 5306 deaths from all causes included 590 which were referred to the principal infectious diseases; of these, 252 resulted from measles, 8 from scarlet fever, 44 from diphtheria, 233 from whooping-cough, 5 from enteric fever, and 48 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Kensington, the City of Westminster, Hampstead, Holborn, Wandsworth, and Lewisham; and the highest death-rates in Fulham, Shoreditch, Bethnal Green, Stepney, Southwark, and Bermondsey. The 252 deaths from measles were 45 above the average number in the corresponding period of the five preceding years; this disease was proportionally most fatal last month in Fulham, Bethnal Green, Southwark, Bermondsey, Lambeth, and Battersea. The 8 fatal cases of scarlet fever were 10 below the average number; 2 belonged to Lewisham. The 44 deaths from diphtheria agreed with the average, and included 6 in Camberwell, 4 in St. Pancras, 4 in Hackney, 4 in Bermondsey, and 4 in Lambeth. The mortality from whooping-cough was lower than in any preceding month of the present year, but still showed a large excess over the average, the deaths from this disease numbering 233 against an average of 121; this disease was proportionally most fatal in St Pancras, Finsbury, Shoreditch, Bethnal Green, Southwark, and Greenwich. The deaths from enteric fever numbered 5, against a corrected average of 8; 2 deaths belonged to Islington. The 48 fatal cases of diarrhœa and enteritis among children under 2 years of age showed a decline of 39 from the average; 6 deaths belonged to Stepney, 6 to Wandsworth, 4 to St. Pancras, 3 to Kensington, and 3 to Southwark. In conclusion, it may be stated that the aggregate mortality in London in May from these principal infectious diseases was 22 per cent. above the average.

(Week ended June 22nd, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 11·7, against rates declining from 15·0 to 11·4 per 1000 in the six preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 12·0, or 1·0 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 5·1 in Halifax, 5·5 in Enfield, and 6·6 in Ilford, to 17·1 in Gateshead, 17·7 in Sunderland, and 17·9 in Middlesbrough. The principal epidemic diseases caused 283 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 117 from measles, 73 from whooping-cough, 37 from diphtheria, 35 from infantile diarrhœa, 11 from scarlet fever, and 10 from enteric fever. Measles caused a death-rate of 1·8 in Sunderland, 1·9 in Birkenhead and in Hull, and 5·4 in Barnsley; and whooping-cough of 1·5 in Warrington and in Sunderland, and 1·8 in Walsall. The 827 cases of scarlet fever and 1193 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 28 and 7 above the respective numbers remaining at the end of the previous week. Of the total deaths in the 96 towns 122 resulted from violence. The causes of 39 deaths were uncertified, of which 9 were registered in Birmingham, 4 in South Shields, and 3 each in Southend-on-Sea, St. Helens, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 11·8, against rates declining from 17·0 to 10·9 per 1000 in the five preceding weeks. The 260 deaths in Glasgow corresponded to an annual rate of 12·2 per 1000, and included 19 from measles, 8 from whooping-cough, 4 from infantile diarrhœa, 3 from diphtheria, and 1 from scarlet fever. The 72 deaths in Edinburgh were equal to a rate of 11·3 per 1000, and included a fatal case each of measles, scarlet fever, and infantile diarrhœa.

Irish Towns.—The 129 deaths in Dublin corresponded to an annual rate of 16·9, or 0·1 per 1000 below that recorded in the previous week, and included 3 from infantile diarrhœa, 2 from whooping-cough, and 1 from diphtheria. The 191 deaths in Belfast were equal to a rate of 25·3 per 1000, and included 9 from whooping-cough, 2 from measles, and 1 from infantile diarrhœa.

LEEDS UNIVERSITY.—At a meeting of the Council, held on June 19th, Captain M. J. Stewart, M.B. Glasg., M.R.C.P. Lond., was elected Professor of Pathology and Bacteriology in the University. Captain Stewart was appointed in 1910 clinical pathologist at the Leeds General Infirmary, and in 1912 honorary demonstrator in clinical pathology at the University.

THE LATE DR. MALCOLM MACKINTOSH.—Dr. Mackintosh, who died at his residence, Frankfort House, West Side, Clapham Common, on June 18th, a well-known practitioner in South London, was educated at the University of Glasgow, where he graduated M.B., C.M., with commendation, in 1880, taking the M.D. degree in 1893. He was an ex-president of the South-West London Medical Society and physician to the Hostel of God, Clapham Common. His contributions to THE LANCET included a Case of Empyema, Primary Sarcoma of the Kidney, and Pancreatic Glycosuria, which he wrote in the years 1895–96.

Correspondence.

"Audi alteram partem."

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

To the Editor of THE LANCET.

SIR,—I am writing on behalf of the distressed doctors and pharmacists in Belgium, whose need at the present time is sore. In the early days of the war there was a generous response to our appeal. Nearly £20,000 was subscribed; but this is almost exhausted, and although you, Sir, keep the matter constantly and vividly before us, there is now little or no dancing to your piping.

In 1916, at the earnest entreaty of Mr. Herbert Hoover, who at that time was the Director of the Commission for Relief in Belgium, we began to send every month £800 to a committee in Brussels called the Aide et Protection aux Médecins et Pharmaciens Sinistrés Belges. These monthly remittances were continued until December, 1917, but since then they have been reduced to £400, and if we cannot raise more funds even these must stop after July of this year.

Do British doctors and pharmacists really know—

1. That money is urgently needed?
2. That it goes to Belgium and not to doctors and pharmacists in this country?
3. That it really reaches the Belgians and is not grabbed by the Germans?

If they did I cannot believe that they would allow the stoppage of these remittances, even though their own purses may be light and the prices of all commodities may be constantly rising.

In order to satisfy those who are holding back because they are uncertain on these points, we have obtained the most recent information from the Commission for Relief in Belgium. Writing on June 18th, Mr. Lewis Richards, the Assistant Director, says:—

"There has been no change in the method of sending in these subsidies, a method with which your society is already familiar. I need hardly remark that the charities thus in receipt of subsidies through our channels are most carefully administered, and there is no possibility of any leakage on the way. I would like, however, to repeat, nor can we emphasise this point too strongly, that the need of help for Belgium grows with every day, and the reports which we receive from all branches of the work are nothing short of heartrending. In this connexion we think you will be interested in reading an appeal which we recently received from a commission of doctors in Belgium asking for various medicines. You will see from this letter the difficulties against which the medical profession in all its branches have to contend.

Your Fund is one which reaches a class which cannot be helped in any other way. For the most part the professional men are too proud to come to the public soup-kitchens, and after four years of terrible privation, any little savings which they may have had are by now exhausted. But they will, and do, most gratefully receive help from your Fund, and with the assistance thus given them goes a most comforting feeling that their happier colleagues overseas are not forgetting them, a feeling which brings moral support, as the money brings them material comfort.

We most warmly beg you to continue your splendid support to the Belgian doctors and pharmacists, whose need is unquestionably terrible and whose gratitude, although under present conditions it cannot be expressed directly to you, is most real and heart-felt."

The appeal which he encloses is a request "for the importation into Belgium of a certain amount of medical supplies of both vegetable and chemical origin of which there is a total lack, and the absence of which constitutes a real danger to the public health." It is backed by a precise explanation of the manner in which the needs of the population are gauged and the way in which the distribution is carried out.

This supplies an excuse for approaching the general public, which our committee are now reluctantly compelled to do. It has been asked why the public should assist the medical more than any other profession, but it may be answered that the existence of doctors and the supply of drugs are essential to the public welfare. May I suggest that if your readers would not only themselves give what they can spare, but

would make a personal appeal to their wealthy and benevolent patients and friends the difficulties of our committee might be overcome.

We need a large sum; but it is to pay a debt which we owe to our hardly-entreated brothers. Can we forget that they are in those straits because they are citizens of a country which in 1914, with nothing to gain except the world's respect, and everything except their honour to lose, stopped the German rush and so saved this Empire and France and civilisation from a catastrophe the magnitude of which we perhaps even now do not altogether appreciate?

I am, Sir, yours faithfully,

RICKMAN J. GODLEE,
Chairman of the Belgian Doctors' and Pharmacists' Relief Fund.

June 24th, 1918.

Subscriptions may be sent to the honorary treasurer, Dr. H. A. Des Vœux, 14, Buckingham Gate, London, S.W. 1.

CÆCOPLICATION.

To the Editor of THE LANCET.

SIR,—The article by Surgeons-General Sir W. Watson Cheyne and Arthur Edmunds on cæcoplication in your issue of June 15th is one of great interest to all who have to do with abdominal surgery. The condition of cæcum mobile, or perhaps more correctly "prolapsed atonic cæcum," is a common one in females, and in a fair proportion of cases gives rise to a symptom-complex which is definitely distinguishable from that of chronic appendicitis. The two main distinguishing features are: (1) In cæcum mobile the pain is aggravated by standing, is always worse towards the end of the day, and is promptly relieved by rest in the recumbent position; (2) on examination there is no definite localised tenderness, but a sensation of diffuse discomfort on palpation of the right iliac fossa. Such symptoms are more than suggestive, and the diagnosis may be confirmed by X ray photographs after a bismuth meal, which will show unduly prolonged retention in, and the prolapsed position of, the cæcum. Previous to the war I had performed the operation of cæcoplication in some 15 cases of prolapsed cæcum, in most of which the correct diagnosis was possible before operation, and in all of which relief of symptoms followed this operative procedure. Two cases, however, were specially noteworthy, as in both the patients (young women) were admitted to hospital with the diagnosis of "acute appendicitis and peritonitis," giving a history of acute abdominal pain and vomiting of 24 hours' duration following on chronic discomfort on the right side of the abdomen of some months' duration. In both cases there was marked tenderness in the right iliac and suprapubic regions, but little rigidity. Immediate operation in both cases revealed a greatly distended prolapsed cæcum firmly impacted in the true pelvis. Considerable difficulty was experienced in withdrawing the cæcum, which came out of the pelvis with a dull report like that heard on the withdrawal of the plunger from a plugged syringe. The appendix was normal in both cases. Lasting relief was obtained by cæcoplication.—I am, Sir, yours faithfully,

Edinburgh, June 23rd, 1918. D. P. D. WILKIE, M.Ch., F.R.C.S.

To the Editor of THE LANCET.

SIR,—The paper by Surgeons-General Sir W. Watson Cheyne and Arthur Edmunds has brought vividly before the profession the insufficiency of routine appendicectomies for so-called cases of chronic appendicitis.

Four years ago I began to perform an operation on voluminous cæca, which I noted in the hospital records as "reefing the cæcum." This operation I found afterwards was practically identical with that described by Blake earlier in the same year. My idea at the time was not that the operation would influence any pain in the right lower quadrant, but rather that I was obliterating literally a cesspool from which there was constant absorption, giving rise, at least in part, to the various symptoms that have been ascribed to an intestinal stasis (cæcal). It was a relief to find that post-operative discomfort was in nowise increased, as the writers remark, and, further, in most of these cases the tendency to stasis was diminished, as shown by radiographic findings and the marked relief of troublesome constipation. Since then I have had others in which the results have by no means been so successful, but better results will be obtained doubtless by more careful investigation and interpretation of the X ray findings. It is also imperative that there must be at the operation a good exposure of the ileo-cæcal region, and the surgeon will act according to the operative findings, not according to any preconceived plan.

It may be advisable to infold the cæcum and, should the cæco-colon be mobile, to suture it to the lateral peritoneum. Further, obstructive bands should be divided, kinks straightened out, and a careful re-position of peritoneum made. An incompetent ileo-cæcal valve can be improved by the method of Kellog. The surgical problems of the right lower quadrant are by no means solved, and indiscriminate cæcoplications are to be avoided, more especially by the occasional operator.—I am, Sir, yours faithfully,

Burnley, June 24th, 1918. JOHN H. WATSON.

"HEALTH CENTRES" FOR BOROUGH AND COUNTY.

To the Editor of THE LANCET.

SIR,—With the coming in of a Ministry of Health the following arrangements will need to be made locally in each borough and county:—

1. To-day the borough medical officer of health is located in rooms in the town hall. The rooms are often quite defective in size and are without libraries, museums, or lecture halls specialised for sanitary purposes. With the removal of the medical officer of health from the jurisdiction of the borough council that official will need a new office in the town, with laboratories, museum, library, and lecture hall. This I call for want of a better title the future "Health Centre" of the borough. The State would pay the cost and the building would be under the "Office of Works" in London and completely free from borough interference or inspection in any way whatever.

In the county town a similar "Health Centre" would be built for the officer of health of the county, who under the new arrangement would cease to be a county council official, but would be a district State official paid entirely out of national as opposed to county funds and living in the county town centre. The full onus of health recommendations to the borough or county authorities would fall on the borough or county health officer, who would address the corporation direct in the name of the Minister of Public Health.

If the borough or county council desired to have an *executive* medical officer of health to supervise executive work and carry out routine duties this junior officer would be supplied by the State and paid for by it, in the same way that we in the Army supply a medical officer to a battalion or a sub-district, but the medical officer remains under the discipline of the directing county medical officer and is really a local adviser on the spot.

2. At this health centre all medical and sanitary organisations in the borough or the county would be centralised. All school medical officers, all Poor-law doctors, all panel doctors—in fact, all officially paid medical men—would find in this "Health Centre" a greatly needed educational and instructional institution.

The wonder is that up to this date no such centre exists in most counties or boroughs.

These places will take time to develop and private munificence of philanthropic men may in certain cases step in to construct a model "Health Centre." Just as the cathedral centralises clerical interests, or the county court centralises law interests, so the "Health Centre" of the borough or county will in the near future give to the medical profession a local habitation and a name in every town and county in the land. People in a generation hence will wonder how we for so long a period existed without such institutions.—I am, Sir, yours faithfully,

GEORGE J. H. EVATT, M.D.,
Surgeon-General (retired).

Junior United Service Club, June 17th, 1918.

EVANESCENT LUNG CHANGES IN UNDIAGNOSED PYREXIAS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Jan. 19th, 1918, Colonel W. Pasteur and Major B. Hudson recorded a case of pyrexia in which definite physical signs of changes in the lungs were found that might easily have escaped a rapid examination. If such signs had not been detected, the authors point out, the case would have been diagnosed as "P.U.O.," and they suggest that further light might be thrown on many featureless cases of P.U.O. by a more careful and detailed examination of the chest.

In the spring of 1916 15 cases were observed at a base hospital in France in which fever was accompanied by abnormal physical signs in the chest that might readily have been missed, and which in some instances varied in a remarkable manner from day to day. [Here were given notes of six cases illustrating the nature of the changes noted and the type of case in which they were observed.]

These cases, in common with that recorded by Pasteur and Hudson, all had changes in the lungs that might readily escape observation and that were accompanied by pyrexia that would justify a diagnosis of P.U.O. In all the absent or diminished breath sounds, the loss of voice conduction, and a percussion note that was described as slight dullness or a flat tympany, suggest an area of deflated lung tissue. Attention was first drawn to the lesions by a localised limitation in the movement of the chest wall. In five of the six cases examination with the fluoroscope showed a localised slightly increased density in the thoracic contents.

The rapid clearing of some of the patches and the wandering character of the changes suggest that if an inflammatory process was present in the alveolar tissue of the lung it was of a slight degree. The signs of consolidation in Case 4, the appearance of a tenacious sputum with rusty streaks in Cases 1, 2, and 5, and the presence of fine crackling râles in Cases 2, 3, and 4, and of dry adventitious sounds in Case 2, point to an inflammatory process. The suggestion of Pasteur and Hudson that the signs in their patient might be accounted for by an inflammation of bronchioles and to some extent of alveoli causing a partial block to the entrance of air to portions of lung seems to be supported by the present cases. The explanation would account for the wandering nature of the patches by the readiness with which a process in the bronchi that could extend distally in one direction one day might extend in another a few days later, and it would account, also, for the rapid clearing of the signs by a partial subsidence of the inflammatory process in the passages and a free air-entry to the alveoli.

In Cases 1, 2, and 3 the association of the appearance of the physical signs with the rise of temperature, and the absence of other explanatory findings, point to an infection, the local manifestations of which were found in the lungs only, being the cause of the pyrexia. In Cases 4, 5, and 6 the relation between the pyrexia and the lung changes is not so clear. Case 4 showed tenderness of the shins and relapsing pyrexia suggestive of trench fever. Case 5 was suspicious of an infection of the enteric group, and Case 6 had signs and symptoms of catarrhal jaundice. In these cases the thoracic condition appeared to be incidental to some other infection.

This series of cases points to the possibility of an inflammation of the lower air-passages giving rise to an illness the nature of which can only be recognised by careful examination of the chest and to the possibility also of such an inflammation complicating an independent infection. They suggest further that a more detailed examination of the chest in cases of fever of doubtful origin would differentiate a number in which there is an inflammation of the lower air-passages, and so help, if but a little way, in diminishing the large number of heterogeneous conditions at present diagnosed as "P.U.O."—I am, Sir, yours faithfully,

FRANCIS R. FRASER, M.B., Ch.B., F.R.C.P. Edin.,
Temporary Captain, R.A.M.C.

ON FACIAL EXPRESSION IN THE DEAD.

To the Editor of THE LANCET.

SIR,—Dr. J. B. Hellier puts an interesting question when he asks whether there is any authentic evidence of the persistence of emotional expression after death, and the field of observation which he suggests—the battlefield—should likeliest yield an answer.

Bearing upon this question there comes to mind a curious passage from the writings of Rodolphe Töpffer, a Swiss author formerly much read and specially praised by Xavier de Maistre. It occurs in his "Nouvelles Genevoises" (p. 9), where, commenting on the characteristics of life, he states that there is one feature which is amongst the first to appear and the last of all to disappear. So true is this that in its absence we may be sure that the rest of humanity has ceased to be. This feature is vanity. He has this, he says, from *un visiteur des morts*, who told him that he regarded the absence of this feature as the surest sign of death. Then follows the passage:—

> "Accordingly, when called upon to certify the fact of death, he would first make sure that the supposed defunct showed no desire whatsoever to figure, no care as to his looks, no concern for the approbation of others; in which case, without even feeling the pulse, he would give his death certificate."

But the man who is without desire to figure—i.e., to play his part; who regards not how he may appear to an onlooking world; who is indifferent to the applause (or blame) of his fellows—that man stands outside the circle of the emotions, and he shows it negatively by a sublime indifference to, a total disregard of, life in all its phases; such, surely, is the aspect of the dead man. It is true that the face after death wears sometimes, in profile, the semblance of a smile (but without its gentleness); that at other times, and oftenest, there is seen an aspect of great dignity. In either case, however, the fixity of the look rules out the expression of that mobile element an emotion. Were it otherwise it would be harder than it is to bury our dead.

I am, Sir, yours faithfully,

June 19th, 1918. HARRINGTON SAINSBURY.

IS FAITH-HEALING MEDICAL AID?

To the Editor of THE LANCET.

SIR,—A case of considerable interest to medical men has recently been decided in the Supreme Court of the Transvaal. This was an appeal from a conviction by a magistrate in the Krugersdorp district in a case where the defendants were charged under the Children's Protection Act of 1913 (Act 25 of 1913 of Union Parliament) with wilful neglect in that they had neglected to provide medical aid for a dying child. The Act in question is practically identical in terms with the Children Act (8 Edw. VII. c. 67), and the section under which the defendants were prosecuted is taken word for word from that Act, and, shorn of its redundant legal verbiage, it practically enacts that anyone over the age of 16 years who has the care of any child or young person, and who wilfully ill-treats or neglects such child or young person, by, among other omissions, or commissions, failing to provide adequate food, clothing, medical aid, or lodging, shall, on conviction, be punished according to the statute. In England and elsewhere several cases have been tried under this section, and the decisions given in these cases are all interesting. But in this case a novel legal point was raised for the defence, and the case is therefore of more than ordinary interest to medical men.

Briefly the facts of the case were as follow:—

The defendants, a couple named Botha, members of the "Apostolic Brethren," a religious sect that approaches in its tenets the simple faith of the "Peculiar People," had an infant son who fell ill with interstitial pneumonia. The parents were apparently too poor to call in medical aid, but the case was reported to the magistrate and the services of the district surgeon were requisitioned. He saw the child, diagnosed the complaint, and gave the father directions as to treatment and supplied him with medicine. Instead of treating the child with the medicine the parents called in fellow members of the sect, who treated the sick child by the laying on of hands. In due course the child died, and the parents were prosecuted. At their trial before the magistrate they pleaded that they had done all that the law required in that they had called in medical aid and treated the child accordingly, their contention being that treatment by the "Apostolic Brethren" was medical aid in terms of the section. They admitted that they had refused the assistance of the district surgeon, and frankly stated that they had no belief in the efficacy of his treatment. In support of their contention they called a mass of evidence to prove that the laying on of hands had been successful in achieving cure where orthodox medical aid had signally failed. Notwithstanding this the magistrate convicted the defendants.

On appeal, counsel for the defence argued that such faith-healing was medical aid. The question at issue here was not merely whether there had been wilful neglect. In the well-known case of Regina *versus* Simon (1 Q.B. 283), Grantham J. held that "the fact that the defendant was one of the 'Peculiar People' of itself goes to show that what he omitted he left undone with intent—that is, wilfully." In the case of Regina *v.* Senior (ibid.) followed in that of Rex *versus* Lewis (7 Can. Crim. Cas. 261) it was held that the omission to provide medical aid for a dying child amounted to neglect. On this point, then, the law is clear. But, apparently, the point whether unorthodox methods of treatment can be held to be medical aid in terms of the section has never been decided. It was argued in this case that the parents were by no means neglectful; that they had indeed done their best, according to their faith, to treat the child; that the law did not lay down that any specific line of treatment constituted medical aid; and that, moreover, it could be shown that such treatment as they had given the child had proved efficacious in numerous instances, and that they were accordingly justified in presuming that it would prove efficacious in this case.

The evidence—the usual *ex parte* statements of patients who had been cured of what they believed to have been organic disease after their own medical attendants had given them up—was commented upon at length, and apparently—since no rebutting evidence was called by the prosecution, who relied mainly on the legal point—visibly impressed the judges. In affirming the magistrate's decision Judge President de Villiers ruled that by medical aid the law meant such assistance and aid as could be given by a properly registered practitioner. This, he ruled, was clearly the intention of the legislature, and so long as that intention was not specifically modified by amendment of the section it must be held that unorthodox lines of treatment could not claim to be medical aid in terms of that section.

The decision is an important one in view of the widespread public interest that the case excited locally, and also in view of the fact that the point has not been ruled upon previously. To a medical man the evidence in support of the appellants' contention is utterly irrelevant evidence, but to the public, and it seems to the judges who heard the appeal, it is at least very remarkable evidence. No doubt if the public and the lawyers are acquainted with the even more remarkable series of cases quoted by Dr. Le Bec in his recently published "Les Preuves médicales du Miracle"—a clinical study of the therapeutic effects of Lourdes waters—they would have found it even more difficult to refrain from the fullest sympathy with the defendants. It is just cases like these, where no rebutting evidence is called, and where witnesses are allowed to speak on highly technical points without criticism, where the judge has no medical assessor to guide him, and where no layman can possibly adjudicate on the merits of the evidence, that prejudice the profession, since its own case is permitted to go by default. In the circumstances, it is satisfactory to find that the law takes a common-sense view of the intentions of the legislature, and regards as medical aid such treatment as the majority of people would have preferred to the ministrations of faith-healers, however well minded and however sincere.

I am, Sir, yours faithfully,

C. L. LEIPOLDT.

Education Department, Pretoria, May 1st, 1918.

MILITARY SERVICE (No. 2) ACT, 1918.

To the Editor of THE LANCET.

SIR,—I should like to bring the following matter before your readers, as there may be others who, like myself, are concerned.

I am a whole-time medical officer of health and just under the new military age for doctors. In 1912 I was gazetted captain on the establishment of officers of the Sanitary Branch of the R.A.M.C. (T.F.). These officers' services are available on mobilisation. I am still on the establishment, and have not been mobilised. I have received a circular from the Ministry of National Service *re* calling up and medical examination.

I should like to know, as I am still a commissioned officer on the Reserve, if I am outside the scope of the above Act by the exceptions mentioned in the 1st Schedule, para. 2. The point is, that if I am called up and passed fit under the above Act I may be recommended for a commission, possibly of the lower rank of lieutenant, whereby I should forfeit my rank of captain, my six years' seniority in that rank, pay, and employment as a sanitary specialist.

I am, Sir, yours faithfully,

June 15th, 1918. SANITARY OFFICER, R.A.M.C. (T.F.)

*** Our correspondent has received from the Ministry of National Service Circular M.N.S.R. 6, which was sent to all members of the medical profession, but we presume that he has not received a calling-up notice for medical examination. This he should not receive, and if he does he can get it cancelled, for medical men who are on the establishment of Territorial Force units are technically in the Army. In any event, as our correspondent remains a commissioned officer, we cannot think he would lose his rank.—ED. L.

WILLIAM JASPAR RENDELL, M.R.C.S. ENG., L.S.A., SURGEON-MAJOR, A.M.D. (RETIRED).—Surgeon-Major W. J. Rendell, who died recently at his residence, Gonvena House, Wadebridge, in his eighty-sixth year, entered the Army as an assistant surgeon in 1853, being thus enabled to serve during the Crimean War, and later during the Indian Mutiny, when he was present at the relief of Lucknow. He retired from the Army in 1875.

Medical News.

THE LONDON MEMORIAL TO DR. ELSIE INGLIS.—An inaugural meeting for the Elsie Inglis Memorial Fund is to be held at the Mansion House on Friday, July 5th, at 3 P.M., the Lord Mayor presiding. The Earl of Selborne, Lady Frances Balfour, and Commander Locker Lampson are announced to speak. The appeal is for a fund to establish a chair of medicine in the University of Belgrade after the war, to be occupied by an Englishwoman. The proposal has been welcomed by the Serbian Minister to Great Britain. The general committee of the Fund includes the names of Dr. Aldrich-Blake, Sir Walter Fletcher, and Sir Alfred Keogh, and an executive committee is to be chosen from members of this committee and the executive of the London Units of the Scottish Women's Hospitals.

THE OXFORD OPHTHALMOLOGICAL CONGRESS.—The Congress will hold its ninth annual meeting at Oxford on Thursday, July 11th, and Friday, July 12th. Members will be accommodated in Keble College, and early application should be made to the secretary, Mr. Bernard Cridland, Salisbury House, Wolverhampton. The proceedings will take place in the Department of Human Anatomy in the University Museum and the Scientific and Commercial Museums will be housed in the same building. The members will meet informally at dinner in Keble at 8 P.M., on Wednesday, and on Thursday morning the Master of the Congress, Mr. Sydney Stephenson, will welcome the members with an address. Afterwards Sir William Collins will deliver the Doyne Memorial lecture and open a discussion on Ophthalmology and the War, in which the following will take part: Lieutenant-Colonel R. H. Elliot, Captain E. H. E. Stack, R.A.M.C. (T.), Miss Marion Gilchrist, Dr. C. Killick, Dr. T. H. Butler, Major G. H. Pooley, R.A.M.C. (T.), Mr. V. Cargill, Captain P. H. Adams, R.A.M.C. (T.), Captain P. J. Hay, R.A.M.C., Captain T. Henderson, R.A.M.C., Major Cecil Clements, R.A.M.C. (T.), Mr. Bernard Cridland. On Friday, the 12th, papers will be read by Sir William Barrett, F.R.S., Colonel S. Hanford McKee, C.M.G., C.A.M.C., Lieutenant-Colonel Elliot, Dr. Butler, Captain Henderson, and Captain Hay. In the Scientific Museum demonstrations of new ophthalmic apparatus will be given by Sir William Barrett and others, and there will also be on view a collection of pathological specimens, photographs, and radiograms. On the afternoon of Friday cases will be shown at the Eye Hospital by Captain Adams and others, a discussion on which will follow.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on June 11th, 17 cases were considered and £205 voted to the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 52, of L.R.C.S. Irel. who practised in Cornwall and died in February of this year. Applicant left with only £30 per annum and unable to undertake immediate work. Staying with friends at present. Voted £10.—M.R.C.S. Eng., aged 54, unmarried, who practised at Great Crosby, Liverpool. Suffering from neurasthenia since Christmas, 1917, and has not earned anything since February, 1918. Savings all exhausted. He rents one room at 6*s.* a week. Voted £26 in two instalments.—Daughter, aged 57, of M.R.C.S. Eng. who practised at St. Day, Cornwall, and died in 1917. Applicant earned a living as a teacher of music and managed to get on until the outbreak of war. Has now practically lost all her pupils and is in financial difficulties. Relieved once, £12. Voted £12 in 12 instalments.—Daughter aged 61, of M.R.C.S. Eng. who practised at Long Sutton and died in 1879. Applicant's health is indifferent. Income £25 per annum from dividends. Acts as housekeeper without salary. Relieved three times, £36. Voted £12 in 12 instalments.—Daughter, aged 54, of M.R.C.S. Eng. who practised at Box, Wilts, and died in 1894. Applicant, with two sisters, was left without means. In consequence of ill-health not able to earn sufficient to keep themselves. One of the sisters receives help from the Fund. Relieved eight times, £118. Voted £12 in 12 instalments.—Widow, aged 44, of M.R.C.S. Eng. who practised in North Wales and died in 1910. Applicant is left without means, with two children, now aged 12 and 9. Lives rent free in return for services and has occasional help from friends. Relieved six times, £60. Voted £10 in two instalments.—Widow, aged 54, of L.S.A. Lond. who practised at Leicester and died in 1910. Applicant was left unprovided for with four children, two of whom are now working, and contribute £2 11*s.* per week towards the upkeep of the home. Applicant's health bad, and owing to the high cost of food finds it difficult to manage. Relieved six times, £72. Voted £12 in 12 instalments.—M.R.C.S. Eng., aged 75, married, who practised at Darlington and Malden. Owing to increasing age and ill-health unable to work, and this combined with the high cost of living and illness of wife, applicant finds he cannot manage with his income of about £100 a year. Relieved once, £18. Voted £26 in 12 instalments.—Widow, aged 68, of M.R.C.S. Eng. who practised at Leighton Buzzard and died in 1904. She lost the whole of her income through fraudulent executors. A niece allows her 11*s.* a week, which is all she has. Relieved once, £12. Voted £12 in 12 instalments.

Subscriptions may be sent to the acting hon. treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, W.1.

Dr. David Ellis, professor of botany in the Royal Technical College of the University of Glasgow, has written a book entitled "Medicinal Herbs and Poisonous Plants," which will shortly be issued by Messrs. Blackie and Son, Ltd.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

ROYAL NAVAL VOLUNTEER RESERVE.

To be temporary Dental Surgeons: W. E. Dodd, F. C. Littleton, A. H. Bowes, C. N. Pearson, R. A. Waters, W. Shearer, F. Lodge, J. M. Mark.

ROYAL ARMY MEDICAL CORPS.

To be temporary Colonels whilst employed as Assistant Directors of Medical Services of Divisions: Major (temp. Lieut-Col.) R. N. Woodley, Lieut.-Col. A. H. Safford, Lieut.-Col. J. Powell.

Temporary Majors to be acting Lieutenant-Colonels whilst specially employed: W. de M. Hill, A. Stewart.

Temp. Capt. T. R. St. Johnston to be temporary Major.

The undermentioned to be acting Majors: Temp. Capts. D. McKelvey, J. A. Patterson, W. P. Ker, W. Haward; Temp. Lieut. R. S. Frew. Whilst specially employed: Temp. Capts. T. E. R. Branch, A. W. Tabuteau, A. E. Seller.

Capt. A. G. Wells, D.S.O., relinquishes the acting rank of Lieutenant-Colonel and reverts to the acting rank of Major with pay and allowance of his substantive rank.

R. H. Trotter to be temporary Major while serving at Huddersfield War Hospital.

A. Robertson to be temp. Major whilst serving at Halifax War Hospital.

Temp. Capt. R. C. Phelps relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Temp. Capt. T. L. Harrison (Canadian A.M.C.) resigns his commission on appointment to commission in R.A.M.C.

Temp. Capt. W. P. Desmond (Canadian Army Dental Corps) resigns his commission on transfer to the U.S. Army.

Temp. Lieutenants to be temporary Captains: G. H. Rodolph, H. F. Smith O. LeF. Milburn, S. H. S. Taylor, H. F. Lumsden, L. L. Winterbotham, T. S. Sharpley, F. M. Longson, J. S. Soutter, J. J. Keyms, (acting Major) B. Hart, F. E. Higgins, J. B. Cooke, S. C. Wilkinson, F. Wilkinson, G. I. Cumberlege, H. E. Jones, G. Hardwicke, H. A. De Morgan, W. R. O'Keeffe, H. W. Fisher, A. T. W. Forrester, S. P. Rowlands, A. Macdonald, G. A. J. M. Loughnan, P. O. Moffatt, S. Carter, G. P. Young, G. W. Sudlow, R. H. Robbins, G. S. Robertson, H. F. Warner, W. S. George, T. S. D. Enderby, F. L. Brewer, L. W. Roberts, W. MacKenzie, H. G. Rashleigh, R. W. D. Hewson, W. Sanderson, F. Atthill, H. G. Drake-Brockman, T. J. George, J. F. Weston, A. Emerson, E. L. Galletley, W. A. Ellwood, E. A. A. Saunders, A. I. Cooke, H. E. Heapy, J. C. Mann, F. W. Ritson, R. O. Smyth, L. B. Perry, E. E. M. Price, J. A. MacKenzie, J. F. Douse, E. Wight, R. Gauld, G. M. Davies, J. A. Ross, R. C. Cummins, F. Talbot, J. E. Scott, S. Slade, A. J. Rae, A. Mason, J. D. Bridger, J. P. McGowan, C. I. Milne, A. H. John, J. Renwick, F. E. Wilson, H. A. Lyth, A. R. F. Hay, W. A. D. King, A. F. R. Conder, A. Gilchrist, G. H. Shaw, J. Donaldson, A. L. Robinson, G. A. Johnstone, A. W. F. Edmonds, L. W. Shadwell, J. Brydon, A. J. McConnell, R. S. Frew, J. L. Hawkes, J. B. Macallan, C. H. Wilson, H. Brayshaw, R. G. Barlow, H. A. Williams, J. Jeffrey, M. W. Cantor, H. N. Matthews, N. Morris, J. A. M. Clark, J. Dick, J. A. Currell, T. C. MacKenzie, J. A. Struthers, F. C. Morgan, W. P. Over, G. A. F. Heyworth, G. V. Anderson, J. Menton, C. A. A. Dighton, C. G. MacMahon, E. J. Fisher, J. H. Moore, W. H. Bush, J. A. Jamieson, A. C. Brown, R. H Dixon, W. N. May, H. L. Clift, H. Cristal, A. Gregory, W. M. T. Wilson, M. R. Dobson, L. S. Hooper, R. M. Erskine, R. Robertson, J. D. Clay, L. H. Burner, R. D. Radcliffe, J. Tait, (acting Major) A. C. Sturrock, D. Gray, A. B. Rooke, R. Ward, R. C. Walker, W. Bannatyne, P. Moran, J. J. Tough, W. M. Menzies, G. Stewart, A. J. Ballantyne, A. McEwan, J. A. Thom, G. F. Shepherd, A. G. McIntyre, E. M. Condy, D. T. Harris, L. C. Newton, T. C. Pocock, A. B. R. Sworn, J. E. Keeson, D. B. Davidson, P. Stewart, W. Matheson, G. Y. Caldwell, A. B. Vine, H. F. Overend, J. N. G. Nolan, J. M. Wallace, H. W. Latham, C. J. S. Dismorr, P. H. Henson, J. Sullivan, H. Matthews, G. Deery.

Temp. Hon. Lieut. G. W. Cottis to be temporary honorary Captain whilst employed with No. 22 General Hospital (Harvard unit).

Officers relinquishing their temporary commissions:—Lieut.-Cols. G. J. Johnston, R. J. Rowlette; Majors K. E. L. G. Gunn, Sir A. C. K. Ball, L. Kidd; Captains A. E. Boyd, R. M. Bronte, W. J. Corbett, J. E. Ashby, W. Steadman, W. F. Clark (granted the honorary rank of Captain), E. E. Hobson (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), A. H. Watson (on account of ill-health, and is granted the honorary rank of Captain), H. W. S. Wright (on account of ill-heath contracted on active service, and is granted the honorary rank of Captain), H. W. Harding, L. Rose, E. C. A. Reynolds, R. Friel, W. McCready, G. C. Bury, F. W. A. Ponsford, J. D. O'Connor (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), H. Oswald-Smith (granted the honorary rank of Captain); Lieuts. J. Owen, W. H. Miller, P. A. Mitchell, A. Armer, H. W. J. Hawthorn, G. Arnott, E. Wragg (on account of ill-health, and is granted the honorary rank of Lieutenant)

SPECIAL RESERVE OF OFFICERS.

Captains to be acting Majors: J. F. W. Sandison, G. G. Marshall.

Capt. (acting Major) E. M. Cowell to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Capt. I. M. Pirrie relinquishes the acting rank of Major on re-posting.

Captains to be acting Majors: E. R. Lovell, W. F. Wood, W. H. L. McCarthy, W. B. Cathcart, W. J. Webster, O. J. O'B. O'Hanlon, H. H. Brown.

Lieutenants to be Captains: H. W. Featherstone, W. H. White, D. J. H. Jones, W. R. Mathewson, R. N. Burton, D. Henegan, S. T. Alexander, W. J. Harvey.

Capt. H. P. Gabb, from T.F. Res., to be Captain.

To be Lieutenants: E. B. Verney, R. Hilliard, E. S. Rose, N. D. Ball, E. Miller, J. Peter, P. W. Putnam, R. H. Sunderland, M. D. Vint, and J. P. J. Jenkins (from University of London Contingent, O.T.C.), H. A. Hill (from Birmingham University Contingent O.T.C.), S. P. Castell (from Manchester University Contingent, O.T.C.), and J. R. Dingley, A. E. Jenkins, N. B. Thomas, G. S. L. Kemp.

TERRITORIAL FORCE.

Lieut.-Col. E. M. Sympson relinquishes his commission on account of ill-health and is granted the honorary rank of Lieutenant-Colonel.

Lieut.-Col. G. Cran is retired and is granted permission to retain his rank and to wear the prescribed uniform.

Major R. C. Bailey relinquishes his commission on account of ill-health, and is granted the honorary rank of Major.

Major (acting Lieut.-Col.) E. G. Peck, D.S.O., relinquishes his acting rank on ceasing to command a Stationary Hospital.

Capts. H. Gervis, M. D. Wood, and J. M. Wyatt are seconded for service overseas.

Capt. (acting Major) D. H. Weir to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. (acting Major) G. Stevenson relinquishes his acting rank on ceasing to be specially employed.

Capt. A. L. Flemming is seconded for service with a General Hospital.

Capt. (Bt. Major) H. A. Leebody to be Major.

Capt. J. S. Tomb relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

Capts. C. W. J. Brasher, R. M. Wilson, A. E. P. McConnell, and A. J. Gibson to be acting Majors whilst specially employed.

Capt. (acting Lieut.-Col.) G. Mackie to be Major and acting Lieutenant-Colonel.

Capt. A. H. Newton relinquishes his commission on account of ill-health and is granted the honorary rank of Captain.

H. H. Fowler, W. H. S. Dunn, S. G. Reed, and J. Buckland to be Lieutenants.

Lieut.-Col. J. Thomson and Lieut.-Col. A. Nicol are retired under para. 116 T.F. Regulations and are granted permission to retain their rank and to wear the prescribed uniform.

Capt. (acting Lieut.-Col.) R. S. Humphrey reverts to the acting rank of Major on ceasing to command a General Hospital, with precedence from Jan. 4th, 1918, and remains seconded.

Capts. B. L. Davis, J. R. B. Russell, and D. C. L. Fitzwilliams to be acting Majors whilst specially employed.

Capt. H. R. Parsloe, from T.F. Res., to be Captain.

Lieuts. R. K. Ellison and A. D. Peacock to be Captains.

Capt. A. N. S. Carmichael, from Deputy Assistant Director of Medical Services, to be Captain.

Capts. C. A. Whyte and T. Brown relinquish their commissions on account of ill health contracted on active service, and are granted the honorary rank of Captain.

Capt. J. C. Herbertson relinquishes his commission on account of ill-health.

TERRITORIAL FORCE RESERVE.

Capt. D. L. Wall, from R.A.M.C., to be Captain.

Major E. N. Cunliffe to be acting Lieutenant-Colonel whilst specially employed.

Major A. C. Turner to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. G. L. Bunting, from R.A.M.C., to be Captain.

Capt. G. H. Hunt is seconded for duty.

VOLUNTEER FORCE.

To be temporary Majors, Norfolk Medical Volunteer Corps: A. H. Meadows, J. K. Howlett (late Lieutenant, R.A.M.C.).

Capt. R. Younger (late R.A.M.C.), to be Captain, and A. A. Martin to be temporary Captain, Northumberland Medical Volunteer Corps.

Capt. D. McKail, City of Glasgow Medical Volunteer Corps (late R.A.M.C.), to be temporary Captain.

G. N. Wilford, Hertfordshire Medical Volunteer Corps, to be temporary 2nd Lieutenant.

Temp. Maj. H. Quayle to be temporary Lieutenant-Colonel, Lancashire Medical Volunteer Corps.

H. Anthony to be temporary Lieutenant, East Yorkshire Medical Volunteer Corps.

Lieut. M. Campbell (late R.A.M.C.) to be temporary Captain, City of Glasgow Medical Volunteer Corps.

Capt. J. White-Hopkins (late R.A.M.C.) to be temporary Major, and Medical Officer and Temp. Capt. W. F. A. Clowes, from 2/2nd Battalion, Essex Volunteer Regiment, to be temporary Captain, Essex Medical Volunteer Corps.

H. Rosling to be temp. Lieutenant, Surrey Medical Volunteer Corps.

W. F. H. Coke and C. E. Etheridge to be temporary Captains, Kent Medical Volunteer Corps.

Capt. K. S. Storrs (R.A.M.C., T.F. Reserve) to be temp. Major and E. H. Andrews to be temp. Lieutenant, Essex Medical Volunteer Corps.

R. Gwynne to be temporary Lieutenant, Shropshire Medical Volunteer Corps.

ROYAL AIR FORCE.

Medical Branch.

H. F. Horne (Bt. Major, R.A.M.C., T.F.) is granted a temporary commission as Major, and to be temporary Lieutenant-Colonel whilst employed as Advisory Sanitary Officer.

Capt. T. Gibbons, from Observer Officer, is granted a temporary commission as Captain.

The undermentioned are granted temporary commissions:—As Captains: G. D. Kerr, C. H. S. Taylor (temp. Surg., R.N.), C. S. Glegg, F. L. Dickson, A. Moir-Gray, H. Munro, C. R. M. Pattison, W. T. Williamson, S. J. Moore, W. Enraght, A. L. H. Rackham. As Lieutenants: C. Lambrinudi, H. MacP. Cargin, L. Patchett, N. F. Stallard, A. Kirkhope, G. A. S. Madgwick, N. H. Medhurst, J. Stark, P. M. Carroll, P. Ashton, H. C. Cox, R. Malcolm, C. A. E. Cook, J. B. Dunlop, P. Hardy, G. A. Simmons, A. J. Swanton, B. R. B. Truman, P. E. Williams, J. W. Yorke Davies, H. F. Squire, C. H. Vernon, W. A. Cooper, W. Cahill, E. S. Sharpe.

INDIAN MEDICAL SERVICE.

The King has approved the grant of the temporary rank of Lieutenant to the undermentioned:—Bishambhar Sahai, Pestonji Byramji, Edgar Ormond Bowie, Abdul Majid Ahmad, Jaideva Varma, Ram Narain Sud, Suraj Narayan Kapur, Umrao Singh Gupta, Bankim Chandra Sengupta, Jogendra Nath Basu, Harendra Nath Bose, Samuel Newman Mukand, Sobha Ram Puri, Shanker Narain Dojiba Gore, Joseph Lawrence Saldanha, Chiman Lall Dhingra, Ram Nath Sharma, Ganga Bishan, Yashvant Prabhakar Gupte, Jiwan Mal Chopra, Padamaji Ardeshir Dastoor, Kandathel Eapen Pothan, Pattathil Balakrishna Menon, Muhammad Sulaiman Ashraf, Kadathil Mathulla Mathew, Chakkingal Krishna Menon, Govindarajapuram Rama Pattar Parasuram, Daivasi Kawany Iyer Kanka Sabhesan, Suresh Chandra Banerji, Subbaraya Kumaraswami Pillai, Jugul Kishore Sharma, Satindra Chandra Basu, Padmanabha Rangappa Bhandarkar.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Died of Wounds.

Capt. (temp. Lieut.-Col.) R. A. Preston, M.C., R.A.M.C., was a student at the London Hospital, and qualified in 1914. After holding an appointment at the Poplar Hospital he joined the R.A.M.C., and was in command of a field ambulance when he was wounded. The award of the M.C. was recorded in THE LANCET of June 26th, 1915, p. 1373.

Lieut. J. W. Senter, R.A.M.C., qualified at Edinburgh in 1910, and afterwards held an appointment at the Royal Infirmary in that city. Prior to joining the R.A.M.C. he was in practice in Edinburgh.

Died.

Capt. J. T. W. Boyd, Canadian A.M.C.

Capt. W. F. Hale, Canadian A.M.C., qualified at Baltimore, U.S.A., in 1903, and was in practice at Broderick, Saskatoon, prior to joining the Canadian Expeditionary Force.

Wounded.

Capt. E. S. Meyers, Australian A.M.C.
Capt. F. J. Miller, Australian A.M.C.
Capt. C. G. Templeman, Australian A.M.C.
Capt. A. E. A. Burkhard, R.A.M.C., attached H.A.C.
Capt. G. W. Will, R.A.M.C.

Previously reported Missing, now reported Prisoner in German Hands.

Capt. A. H. Little, R.A.M.C.

THE HONOURS LIST.

The following awards to medical officers are announced :—

Distinguished Service Order.

Surg. (acting Staff-Surg.) EDWARD LEICESTER ATKINSON, R.N.—In recognition of his services as senior medical officer of the R.M.A. Howitzer Brigade since May 26th, 1916. He has carried out his duties with the greatest zeal and energy, and has shown an excellent example by his fearlessness and devotion to duty. He has been twice wounded, and would have been relieved but for his strong desire to remain at his post.

Surg. (acting Staff-Surg.) WILLIAM BRADBURY, R.N.—In recognition of his services with the Royal Naval Division in Gallipoli and France. As medical officer of the Hawke Battalion, Royal Naval Division, in Gallipoli, he did exceptionally good work, often under the most trying circumstances.

Capt. (acting Lieut.-Col.) ROBERT BERNARD PRICE, R.A.M.C.—For conspicuous gallantry and devotion to duty. Prior to the division going into action he took over the duties of Assistant Director of Medical Services at half an hour's notice. When on one occasion all casualty clearing stations in the neighbourhood of the division were withdrawn his improvisation on the previous night of an emergency casualty clearing station further to the rear proved of such inestimable value that a large number of casualties were able to be dealt with, and all the wounded evacuated with the utmost despatch. Owing to his resource, forethought, and exceptional powers of organisation the smooth and successful evacuation of all the wounded was carried out during the period of 12 days' heavy and continuous fighting in which the division was engaged.

Distinguished Service Cross.

Surg. HENRY BRICE PARKER, R.N.—In recognition of the exceptionally good work done by him as medical officer of the Nelson Battalion, Royal Naval Division, in Gallipoli.

Bar to the Military Cross.

Capt. JOHN HENRY PEARSON FRASER, M.C., R.A.M.C.—For conspicuous gallantry and devotion to duty. During the evacuation of a town he was in charge of a train loaded with stores and equipment. While the train was standing in the station without an engine it was heavily bombed by enemy aeroplanes. With bombs falling all round he secured an engine which had just backed into the station and coupled it to the train. He then collected a few men and cleared the permanent way of masses of débris caused by the bombs, and eventually got the train away safely under continual bombing by enemy aeroplanes. By his courage, determination, and resource in a most difficult situation he succeeded in saving the whole trainload of equipment. (The award of the M.C. was recorded in THE LANCET of Feb. 9th, 1918, p. 234.)

Temp. Capt. FREDERICK THEOPHILUS HILL, M.C., R.A.M.C.—For conspicuous gallantry and devotion to duty. Several hundred casualties of all branches of the service were passed through his unit during the day, and were evacuated promptly, thanks to his zeal, energy and efficient organisation. When the enemy were advancing his unit was the last to leave the neighbourhood, and finally withdrew, when ordered to do so and when every case had been evacuated, to join the division. He displayed outstanding devotion to duty. (The award of the M.C. was recorded in THE LANCET of June 26th, 1915, p. 1373.)

Capt. (acting Major) HERBERT STEWART MILNE, M.C., R.A.M.C.—For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station. In spite of continuous shelling he dressed and superintended the evacuation of the wounded during three days' operations with great success. When a shell fell among a party of men, killing three and wounding 14 of them, he succeeded in dressing the more severely wounded and in getting them all removed to a place of safety before the next burst of fire fell in the same spot. By his courage and resource he undoubtedly saved a further loss of life. (The award of the M.C. was recorded in THE LANCET of June 10th, 1916 p. 1195.)

Temp. Capt. MATTHEW ARNOLD SWAN, M.C., R.A.M.C.—For conspicuous gallantry and devotion to duty. When the majority of his stretcher-bearers had become casualties and his advanced post had received two direct hits from shells he stayed at his post, dressed the wounded and supervised their evacuation. On many other occasions he has shown the greatest courage, coolness, and initiative, and his conduct has at all times been exemplary. (The award of the M.C. was recorded in THE LANCET of June 10th, 1916, p. 1195.)

The Military Cross.

Temp. Capt. WARREN FULLERTON CLARK, R.A.M.C.—For conspicuous gallantry and devotion to duty. Whilst the battery was being heavily shelled two men were badly wounded. He at once proceeded out into the open, attended to these men under the most intense shell fire, carried them into a trench, and remained with them until an ambulance arrived. He showed magnificent coolness and an utter disregard of danger.

Temp. Capt. JOHN NORMAN CRUIKSHANK, R.A.M.C.—For conspicuous gallantry and devotion to duty. He attended to the wounded under heavy fire during an enemy attack. His skilful organisation of stretcher-bearers and his coolness and determination in a most difficult situation resulted in the saving of many lives.

Capt. JOHN FRANCIS HILL, R.A.M.C., Spec. Res.—For conspicuous gallantry and devotion to duty. He worked throughout the day under incessant shell fire, attending to the wounded during an enemy attack. Owing to his coolness and skill in a most difficult situation, many lives were saved.

Temp. Capt. ANDREW FERGUSON HORN, R.A.M.C.—For conspicuous gallantry and devotion to duty. He led his bearers forward to the front line during a heavy enemy attack and brought back many severely wounded men through the enemy's barrage. Throughout the operations he displayed splendid coolness and courage under heavy fire.

MENTIONED IN DESPATCHES.

The following are mentioned in a despatch received from General Sir E. H. Allenby, G.C.M.G., K.C.B., Commanding-in-Chief the Egyptian Expeditionary Force :—

Royal Navy.—Temp. Surg. A. H. Richardson.

Army Medical Service and Royal Army Medical Corps.—Capt. C. H. Allen; Temp. Lt.-Col. J. W. Barrett, C.M.G.; Capt. C. S. P. Black, M.C.; Capt. F. W. C. Brown; Capt. (temp. Maj.) T. G. Buchanan; Capt. C. H. Budd, M.C.; Capt. (acting Lt.-Col.) H. W. Carson; Lt. (temp. Capt.) R. Catford; Capt. W. K. Churchouse; Capt. H. N. McC. Coombs; Capt. W. F. Corfield; Capt. A. D. Downes; Capt. (temp. Maj.) H. J. Dunbar; Maj. (acting Lt.-Col.) W. F. Ellis; Lt.-Col. T. H. Forrest, D.S.O.; Lt.-Col. W. P. Gwynn; Lt.-Col. A. G. Hamilton; Capt. W. T. Henderson; Temp. Capt. C. W. Jenner; Capt. (acting Lt.-Col.) T. B. Layton; Maj. (acting Lt.-Col.) J. W. Leitch; Temp. Capt. L. Leslie; Temp. Capt. The Hon. L. H. Lindley; Temp. Capt. T. F. Lumb; Capt. E. A. Mackenzie; Col. G. T. K. Maurice, C.M.G.; Temp. Capt. P. W. Moore; Temp. Capt. (acting Lt.-Col.) A. T. Mulhall; Col. D. O'Sullivan; Capt. G. R. Rickett; Capt. (acting Lt.-Col.) G. F. Rudkin, D.S.O.; Lt.-Col. (temp. Col.) H. P. Sewell, D.S.O.; Capt. W. H. Sheffield; Capt. A. B. P. Smith; Temp. Capt. R. B. Smith; Temp. Lieut. H. G. Sparrow; Capt. J. B. Stanley; Capt. O. Teichmann, M.C.; Lt.-Col. H. W. Thomson; Capt. (acting Maj.) W. W. Treves; Capt. F. Ward; Capt. G. H. H. Waylen; Capt. G. A. Williamson; Capt. K. B. Williamson; Temp. Capt. J. G. Willmore; Capt. (temp. Lt.-Col.) J. Young.

Australian Army Medical Corps.—Lt.-Col. A. L. Dawson; Lt.-Col. R. Fowler; Hon. Lt. G. G. Hope; Capt. E. T. Pascoe; Maj. C. V. Single; Maj. (temp. Lt.-Col.) G. E. M. Stuart.

New Zealand Medical Corps.—Maj. C. B. Hercus.

Indian Medical Service.—Maj. S. W. Jones; Lt.-Col. R. W. Knox, D.S.O.; Maj. M. F. White; Lt.-Col. W. W. White, C.B.

Italian Medical Corps.—Capt. V. Bianchi.

THE SPECIAL DENTAL TRIBUNAL.

THE Minister of National Service having agreed, in view of the present conditions, that a registered dentist shall not be called up for military service except for dental work as a commissioned officer, provided that any registered dentist who is left in civilian life is engaged in dental work of urgent national importance, the position of registered dentists has become similar to that of medical practitioners. To deal with the best distribution of the dental services between the military and the civilian requirements a special tribunal, known as the Dental Tribunal, has been appointed, containing representatives of the dental profession and of the Dental Service Committee which has rendered valuable service in dealing with the cases of registered dentists.

The membership of this special tribunal is as follows: Dr. G. S. Buchanan (chairman), Dr. Norman G. Bennett, L.D.S., Mr. H. R. F. Brooks, L.D.S., Mr. G. G. Campion, L.D.S., Mr. W. H. Dolamore, M.R.C.S., L.D.S., Dr. W. J. O'Donovan, Mr. N. Bishop Harman, F.R.C.S., Mr. Walter Harrison, L.D.S., Mr. Montagu F. Hopson, L.D.S., Mr. W. B. Paterson, F.R.C.S., L.D.S., Mr. E. H. Pelham, Mr. Rees Price, L.D.S., Mr. C. F. Rilot, M.R.C.S., L.D.S., Mr. J. Smith Whitaker, M.R.C.S.

Applications for exemption by registered dentists will, on and after July 1st, be dealt with by this tribunal, the address of which is 19, Hanover-square, London, W. 1.

OBITUARY OF THE WAR.

ALGERNON WESTLAKE, M.B., C.M. EDIN.,
MAJOR, ROYAL ARMY MEDICAL CORPS.

Major A. Westlake, who died on May 25th of angina pectoris while in charge of a home camp, was 58 years of age, and third son of the late Edward Westlake, of Woolston, Southampton. He studied at Owens College, Manchester, and Edinburgh University, graduating in 1884, and after holding resident appointments he settled in Grimsby, where he obtained a large general practice. For 20 years he served

the Grimsby and District Hospital as surgeon, and on his recent resignation was made a consulting officer. He had also been surgeon to the Grimsby borough police and honorary physician to the Grimsby District Nursing Home. Soon after the outbreak of the war he was appointed president of the local medical recruiting committee, and received a commission as major in the R.A.M.C. (T.). This and the extra work involved in his appointment on the staff of the Brigham Gate War Hospital and the medical charge of Weelsby Camp resulted in a serious cardiac breakdown last January. On May 25th he was taken suddenly ill with severe pain over the heart, and died soon after his arrival home. His colleagues speak of Major Westlake as a careful and painstaking operator, a man of sound judgment, and ever willing to give all the assistance in his power. As a practitioner he upheld the best traditions of the profession.

IVAN CLARKSON MACLEAN, M.D. LOND.,
MILITARY CROSS (WITH BAR), D.S.O.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain I. C. Maclean, who died of wounds in a German hospital on April 4th, was the son of the late Major-General H. J. Maclean, Rifle Brigade. He took his medical course at St. Thomas's Hospital Medical School, qualifying M.B., B.S. Lond. in 1906 and M.D. three years later. After holding hospital appointments he settled in Knightsbridge, combining general practice with the giving of anæsthetics. When war broke out in August, 1914, he at once volunteered for the R.A.M.C., and was attached for three years to his father's regiment. In

May, 1915, he was awarded the Military Cross for tending the wounded under fire at Neuve Chapelle and a bar to the Cross at the battle of the Somme. He won the D.S.O. and was severely wounded in the jaw at the battle of Ypres, but was able to return to his regiment in January last, and was wounded and taken prisoner on March 24th, dying ten days later of his injuries.

Captain Maclean impressed his personality on his many friends. Very tall, of slight build, and æsthetic mien, he was a keen musician and prodigal of his gifts to afford others pleasure. His Pierrots at St. Thomas's are an evergreen memory, and he was the winner of a prize offered by a London evening paper for the best waltz by a British composer. To his courage and skill under difficult conditions his fellow officers bear witness. All of them write with a sense of personal loss.

ETHELBERT ELRIDGE MEEK, B.A., M.D., C.M. MANITOBA,
CAPTAIN, CANADIAN ARMY MEDICAL CORPS.

Captain E. E. Meek, who was killed in France on May 29th, in his forty-first year, was born at Five Islands, in the Bay of Fundy, Nova Scotia, and passed his youth at Virden, Manitoba, where his father was a general merchant. He graduated in Arts at the University of Manitoba in 1897 and in Medicine four years later, and after three years' residence in hospital settled at Regina, Sask., where he made a position for himself as a capable and popular surgeon. At the end of 1915 he was appointed M.O. to a battalion of the C.E.F., accompanying it to England in May of the following year. After some months on the surgical staff of the Canadian Red Cross Hospital at Taplow he went to France attached in succession to a general hospital, a C.C.S., and the last two months to a stationary hospital. He had been granted transfer to England on account of health and on urgent personal grounds when an incendiary bomb from enemy aircraft struck

the hospital building in which he was working. The operating theatre was completely demolished and Captain Meek was killed along with Lieutenant A. P. H. Sage, M.R.C. (U.S.A.), who was assisting him, as well as the nursing sisters, theatre orderlies, and stretcher-bearers. The wreckage burst into flames, but casualties were limited to those caused directly by the bombs. The burial service, on May 31st, was conducted by Bishop Fallon, of London, Ontario, who was visiting the hospital at the time.

Captain Meek leaves a widow, the daughter of Mr. W. J. Higginbotham, of Virden, and one daughter.

REGINALD GLEGG GORDON, M.B., CH.B. EDIN.,
DISTINGUISHED SERVICE ORDER,
MAJOR, ROYAL GARRISON ARTILLERY.

Major R. G. Gordon, who was killed in action on March 26th, whilst serving as a combatant officer, was in his 40th year, and the only son of D. S. R. Gordon, merchant, of Valparaiso. He was educated at the Edinburgh Academy and University, graduating in medicine in 1903. While a the University he was a keen volunteer and good at field sports, his powers of endurance being well known. After qualifying he took up asylum work, was for a time on the staff of the Crichton Institution, Dumfries, and later studied mental diseases in Italy. On the death of his father, however, he gave up the practice of medicine and took to farming in Perthshire. When war broke out he joined the colours, and received the D.S.O. last January. He was killed during the

retreat from Cambrai while riding at the head of his battery. Major Gordon leaves a widow and four young daughters.

CEDRIC ALWYN STEWART, M.D. MELB.,
MAJOR, AUSTRALIAN ARMY MEDICAL CORPS.

Major C. A. Stewart, who was killed in action on April 28th, at the age of 25 years, graduated at Melbourne University with final honours in 1914. He acted for a year

as resident surgeon at the Melbourne Hospital and was then appointed medical superintendent of the Alfred Hospital, Melbourne, a position which he held for nearly two years, resigning to go on active service. At the Alfred Hospital he had the care of all military cases of cerebro-spinal fever sent for treatment. This experience he embodied in a work conjointly with Captain Fairley, for which he was granted the diploma of M.D. Melb., receiving also an honorary majority in the Forces. After arriving in England he was stationed for a time at No. 2 Command Depôt, Weymouth, and at the Australian Auxiliary Hospital, Dartford, where he had charge of the special orthopædic work. He went to France early in 1918, attached to an Australian general hospital, going up as a reinforcement of —— field ambulance at the end of March. A month later he was attached for temporary duty to a brigade of field artillery, and it was while attending to the battery commander who had been wounded that he was killed at the battery position, which was being heavily shelled by the enemy. Wherever he worked Major Stewart made friends, and a life of much promise, socially and professionally, has been cut short.

WILLIAM FIELDING McISAAC,

CAPTAIN, CANADIAN ARMY MEDICAL CORPS.

Captain W. F. McIsaac, who died of wounds received by enemy aircraft while on duty at a stationary hospital in France on June 3rd, was aged 24 years and was born at Antigonish, Nova Scotia. He graduated in medicine at McGill University in February, 1917, entering the C.A.M.C. in the following April, and was promoted to captain while serving with a hospital unit in France.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Workmen's Compensation (Silicosis) Bill.

Mr. BRACE, the Under Secretary for the Home Department, has brought in, in the House of Commons, a Bill "to provide for the payment of compensation in the case of workmen who suffer death or disablement, or are suspended from employment owing to the disease known as fibroid phthisis or silicosis of the lungs." This disease exists amongst workers in ganister quarries and in the manufacture of silica bricks. The scheme in the Bill contemplates the establishment of a Central Compensation Fund, contributed to by the employers in these industries. The workman may be required to submit to periodical medical examination.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 19TH.

Grants for Treatment of Tuberculosis.

Mr. BOOTH asked the representative of the National Health Insurance Commissioners whether he had received a resolution passed at the London District Court of the Ancient Order of Foresters protesting against the insufficiency of the provision for the treatment of tuberculosis amongst insured persons; whether increased grants had been provided; and whether the waiting list for London had now been effectively reduced.—Mr. PRATT (on behalf of Sir E. CORNWALL) replied: My honourable friend has not at present received any resolution passed by the London District of the Ancient Order of Foresters with reference to the treatment of tuberculosis amongst insured persons. The answer to the second part of the question is in the affirmative. With regard to the waiting list of the London Insurance Committee, my honourable friend is informed by the Committee that the number on the list has been effectively reduced.

THURSDAY, JUNE 20TH.

Medical Examinations and Grading.

In the course of the debate on the second reading of the Consolidated Fund Bill, Sir HERBERT NIELD raised the question of the medical grading for military service. He said that the system was inadequate, and he wished to prevent the multiplication, especially amongst the older men, of the tragedies with which those who were identified with tribunals were now becoming daily familiar. It was absolutely necessary for the tribunals that the medical grading of the men should be ascertained without any doubt, and this was all the more important by reason of the extension of the military age to 50. The honourable and learned gentleman criticised the meaning and definition of Grade 1. He said that he had evidence again and again of men who had been sent into the Army as C 3 men who had been posted to a battalion and had been seen by the medical officer, who had their categories altered. He proceeded to deal in detail with the medical examination and grading of men in specific instances which he criticised. He mentioned that of the cases which had been sent before the medical assessors by the Middlesex Appeal Tribunal since November, 1917, 30·4 per cent. had resulted in a reduction of grading.

Sir DONALD MACLEAN (the Deputy Chairman of Ways and Means), speaking as chairman of the House of Commons Appeal Tribunal, argued that the medical standard had been altered, and if Parliament had had any idea that was going to happen it would not have passed the last Military Service Act. Under the present system of grading men were not being tested as to their physical fitness for the work of the Army. The test applied was whether they were in Grade 1 of their particular range of ages. He was quite certain that was not what the Army wanted. The tribunals ought to receive full medical guidance as to the cases which came before them. The only safe way to give them a chance to discharge their very difficult duties was to maintain the old standard. He went on to refer to his experience that morning on the House of Commons Appeal Tribunal. Thirty-two appeals were dealt with from men in regard to their medical condition. Twenty-four were granted, five were refused, and three were not concluded. He criticised the grading in several cases. Some of these applicants were able to obtain expert and professional assistance. There were working men all over the country who had to fill up the appeal form within five days, but who gave up the struggle, and that was the reason of the low percentage of appeals. He would warn the Minister of National Service that if he persisted in grading men according to the new standard of their age and not of their physical fitness in comparison with other men in the Army and with what the Army really wanted he was setting up a feeling of growing unrest in this country which was impairing the morale of tens of thousands of men who were the backbone of those who were fighting for freedom.

Reply of Minister of National Service.

Sir AUCKLAND GEDDES (Minister of National Service) said that the old system of categorisation was very unsatisfactory. There was linked with the estimation of every man's physical fitness a strategic conception as to how he ought to be employed. That would have been all right with the R.A.M.C. officers with real knowledge of the various classes of work required on service. It was certainly not all right when it became necessary to employ large numbers of medical men who knew nothing of the Army or of the type of work that various Army departments were called upon to perform.

Sir RYLAND ADKINS: Are not the chairmen of these medical boards still R.A.M.C. men?

Sir AUCKLAND GEDDES: The vast majority, I think, are not. Some are naval. Most, I think, are civilians. They are all in plain clothes. He doubted if there were any R.A.M.C. officers serving and acting as chairmen of the boards anywhere under the Ministry of National Service. His impression was that there were not. Anyhow, the old system of categorisation became impossible to work with civilian doctors. It would be remembered that A meant a man to do certain things, B meant a man to do something else, and C something else, and therefore the whole of that conception was swept away in order that there might be presented to the civilian medical man a really medical problem. That was the first general principle that was approved by the Medical Advisory Committee which was attached to the Ministry of National Service. There was no part of the work of the Ministry which had received greater care and thought than this question of medical grading and of the principles which should underlie it. From the moment of the adoption of that principle the whole of the work on the medical side had been looked at in relation to it. That principle was embodied and turned into a form which could be used by the medical boards in the various publications issued by the Ministry for the guidance of the medical boards. The right honourable gentleman went on to deal with the definition of Grade 1, which comprised "those who attain the normal standard of health and strength and are capable of enduring physical exertion suitable to their age." Many honourable Members had misunderstood how the system was really working. Every man required two indices to place him in the proper place on the posting chart. He required his grade and then his age, and it was a combination of grade and age which settled a man's place in the square and the service he was to render. The posting charts were drawn up in such a form that that was visible to anyone who looked at it. The actual posting of the arms must be a matter for the War Office, but the two departments in this matter have worked closely together and always have done. There was in every case the double consideration: What is the man's grade and what is his age? He could not conceive of any system which civilian doctors could

work which would be very different from that. Honourable Members could not possibly take a great block of ages extending from 18 to 50 and pick out of them the men who were going to be suitable for infantry in the trenches over the whole range. That was an impossible thing medically and it was not intended. The only thing that medical men could do in the way of settling what was a man's physique was to judge upon the physical signs of disease and see whether he was reasonably fit for his age. It was not possible for any doctor to place a man absolutely into a pigeon-hole. All that one could say was that a man was fit for his age or not fit for his age. That was the meaning which was attached by definition at the time of their introduction to the terms Grades 1, 2, and 3, and really it was far too serious to allow the accusation that there had been a breach of faith in this matter to remain unanswered. The Ministry of National Service had not changed the meaning of those terms, and had not changed the principle on which they were working. That was a fact. He had nothing to conceal in this matter. The principle at work was that a man's physical fitness should be determined in respect of his age, that his age should be considered, and that the whole of his employment in the Army should be determined by the consideration of these two facts.

Medical Boards.

Referring to medical boards, the right honourable gentleman said that a very great number of medical examinations were being carried out. He had given an estimate in April that 35,000 would be carried out a day. That had proved a wrong estimate. They had never been able to work up to anything like that number. They were at present employing a very large number of medical men, running into thousands, and were allowing a quarter of an hour of medical time for every examination. The medical examination of every man cost for medical time alone 4*s.* 2*d.* It was not possible to complete every man's examination in a quarter of an hour, nor was it necessary to examine every man for a quarter of an hour. There were many cases which were dealt with in two or three minutes. Rightly so, because the man was either rejected or was obviously, for some reason or other, of the lowest grade that could become available for service. Grade 3 men of the new age-period were not being called up, and therefore it was not necessary to complete a very elaborate examination if the man was obviously not fit for one of the higher grades. He did not think it possible to obtain the services of more medical men than those who were now employed. They were about the maximum that could be obtained without detriment to the medical care of the civil community. Yet the demands of men for the Navy, Air Force and Army were so insistent that the number of examinations performed daily could not be let down. They therefore had to face the fact that about a quarter of an hour of medical time was all they could afford nationally to provide for the medical examination of these men who are coming forward. They had therefore instructed the boards, where the case was obvious, to push through the examination if the man was not going to be taken for service at all. It was now six or seven weeks since he first became alarmed as to what was happening at some of the medical boards. He would not like the House to consider that it had required stimulation from honourable Members before the department took action. He had himself visited in the last few weeks no less than 24 places in different parts of the country, so that he could be absolutely certain that he knew what was going on, and he thought that he could say this—as a whole the work that was being done was eminently satisfactory throughout the country, and since the criticism of the medical boards began to appear in the press the department had received hundreds and hundreds of letters of thanks and of appreciation of medical examinations.

Mr. CHANCELLOR: From rejected men?

Sir A. GEDDES: From men passed in Grade 1 and Grade 2, thanking us and saying that they consider the attacks unjust.

Difficulties and Pressure.

He would like to express his deep and heartfelt thanks to the medical profession for the work which its members had done under the enormous difficulties and pressure at the present time on very inadequate remuneration. They were working under great strain in civil practice and were helping the Ministry by taking two and a half and perhaps five hours in the course of the day examining recruits. The work that was being done on the whole was to his certain knowledge and from personal observation of hundreds of records most satisfactory. On the other hand, he would be doing less than his duty if he did not admit that at certain places there had been breakdowns. He had himself been to see the London boards at Conduit-street, and he would like to tell the House that the personnel of those boards was in large measure the same personnel that formed the eminently satisfactory Whitehall board. It was the Scotland-yard board which the deputy chairman of Ways and Means said was the board to which he used to send his cases. It was a most extraordinary thing that the same personnel reinforced should be giving different results.

An HONOURABLE MEMBER: Owing to the change in the instructions.

Sir A. GEDDES: That is exactly what I expected would be said. The reason is not a change of instructions. The reason was that in London everyone had felt the pressure of the German offensive and the need for men. It was an unconscious reaction of the pressure of the German offensive that was making these boards pass men who under less pressure they would not pass. They had, however, received precisely the same instructions as other boards throughout the country. There was no other difference between the two. It had been found necessary to slow down the London boards. There was no vice about these boards. They were not trying to pass men through who were unfit. They were trying to do their work absolutely solidly, soundly, and well. Another thing which he would like to impress upon the House was that there was a great deal in the criticism of the boards which was not fair. It was not real. These things came in waves. Once criticism started, criticism grew. Even if there was nothing to complain of, the neurotic complained.

Neurotic Criticisms.

The right honourable gentleman then dealt in detail with several individual cases of which complaint had been made. In regard to one man who had been examined at the Camberwell Baths he complained that he was placed in a bath and made to go through the motion of swimming. That was a sheer bit of hallucination. The baths were floored over and there was no water in them. There was not a shadow of foundation for it. He said that in this difficult, unpleasant, but important matter of examinations not very much help was given by Members of Parliament. Questions were put down without any evidence. No department had had to bear the load which the National Service Department had had to bear recently. The way the staff had stood up to the strain was absolutely magnificent, but naturally with the new classes of men coming in there were difficulties; they could not be avoided. A mistake was made in London, but the bad order was cancelled at once. More could not be done than that. But these things would happen. They had a few bad cases at Conduit-street; he quite admitted that. The right honourable gentleman in conclusion alluded to the necessity of supplying men for the Army.

MONDAY, JUNE 24TH.

Local Medical War Committees in Derbyshire.

Sir H. CRAIK asked the Parliamentary Secretary to the Ministry of National Service whether there was any Local Medical War Committee acting in Derbyshire, and how it happened that Shirebrook, with a population of 12,000, had only two doctors, while Ashbourne, with a population of 4000, had three doctors.—Mr. BECK answered: Local Medical War Committees are now acting in the Glossop and Chesterfield areas of Derbyshire, and efforts are being made to form a new committee for the rest of the county. With regard to the case of Ashbourne, the practitioners referred to serve not only Ashbourne but a wide surrounding district of hilly and difficult country. With regard to Shirebrook, a third doctor who was in practice there joined the R.A.M.C. in 1915.

Maternity and Child Welfare Bill.

Mr. HAYES FISHER (President of the Local Government Board) moved the second reading of the Maternity and Child Welfare Bill, which, he said, was designed to extend the powers of local authorities in England in regard to motherhood and the care and welfare of the infant population of the country. The powers which the Bill proposed to confer on local authorities were already in existence in Scotland and in Ireland. In Scotland they had been administered with considerable success. It was proposed to set up for the purposes of the Bill a system of maternity and child-welfare committees. Local authorities would be able to provide creches, day nurseries, and convalescent homes for nursing and expectant mothers and for children under five. Public opinion was behind the Bill, and local authorities were eager for the powers which it conferred. It was not proposed as a substitute for a Bill instituting a Ministry of Health, which ought to be a big measure and for which there was no time this session. This was a small measure which ought to be passed immediately; it would do something to save the lives of children.

Major ASTOR moved as an amendment:—

"That, in the opinion of this House, a Bill dealing with maternity and child welfare is not satisfactory unless it is accompanied by legislation combining in a Ministry of Health the Local Government Board and the Health Insurance Commissions for England and Wales, and taking powers to transfer thereto the health functions of other Government Departments."

The honourable Member argued strongly on the necessity for establishing a Ministry of Health. Such a measure

consolidating the functions of the various departments with respect to health need not be a long one, and it could easily be passed *pari passu* with this Bill. He feared that the present Bill in leaving things to the initiative of local authorities would lead to delay in dealing with the problems with which it was concerned.

Major HILLS, in seconding, also emphasised the necessity for a Ministry of Health.

After further debate,

Mr. S. WALSH (Parliamentary Secretary to the Local Government Board) said that a definite promise had been given by him that the present Bill would not be used to prevent the bringing in of larger measures.

The amendment was negatived and the Bill read a second time.

TUESDAY, JUNE 25TH.

Dental Surgeons in the Ranks.

Answering Mr. PENNEFATHER, Mr. MACPHERSON (Under Secretary for War) said: As far as can be ascertained, only two qualified dental surgeons are serving as privates and they have not applied for commissions.

Conference on Venereal Disease.

Mr. LEES SMITH asked the Under-Secretary for War to state the names of the members of the Conference on Venereal Diseases over which he was presiding.—Mr. MACPHERSON answered: The members of the Conference include the Archbishop of Canterbury, Cardinal Bourne, the Rev. Dr. F. B. Meyer, and Lord Sydenham, in addition to representatives of the French military authorities, the American Army and Navy, the Dominions and the British Navy and Army.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

MACKENZIE, RACHEL E. W., M.B. Lond., has been appointed Assistant Medical Officer of Health for Woolwich.

To be Certifying Surgeons under the Factory and Workshop Acts: DODD, P. V., M.D. Dub., for the Bishop's Waltham District of the county of Hants; STONES, W. B., B.C. Cantab., for the Galgate District of the county of Lancaster; WACHER, H., M.B., B.C. Cantab., for the Canterbury District of the county of Kent.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary, Lancashire.—Asst. H.S. £200.
Birmingham University, Faculty of Medicine.—Senior Demonstratorship in Anatomy. £250.
Bradford City.—Temp. Female Asst. M.O. 8 gns. per wk.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Cheltenham Eye, Ear, & Throat Free Hospital.—Non-res. Asst. S. £300.
Derbyshire Royal Infirmary, Derby.—H.S. £200.
Devon and Cornwall Sanatorium, Didworthy, South Brent.—Locum Tenens for four weeks. £6 6s. per week.
Dudley Dispensary.—Res. M.O. £250.
Glamorgan County Asylum, Bridgend.—Temp. Asst. M.O. £6 6s. per wk.
Glasgow Eye Infirmary.—Superintendent. £250.
Great Northern Central Hospital, N.—Casualty Officer for six months. At rate of £150 p.a.
Hampstead General Hospital, N.W.—H.P. £200.
Hospital for Sick Children, W.C.—H.S. for six months. At rate of £100 p.a.
Italian Hospital, Queen-square, W.C.—H.S. £150.
Leeds General Infirmary.—Opn. H.S. for six months. At rate of £50 p.a.
Leith Town Council.—Female M.O. £400.
Lincoln General Dispensary.—Res. M.O. £400.
Liverpool, Brownlow Hill Poor-Law Hospital.—Res. Asst. M.O. £300.
Liverpool Stanley Hospital.—R.M.O.
Manchester, Baguley Sanatorium for Tuberculosis.—Locum Tenens Second Asst. M.O. £400.
Manchester City.—Female M.O. £400.
Manchester Corporation.—Temp. Asst. Tubere. Officer. £450.
National Hospital for Paralysed, &c.—Res. M.O., Maidenhead. £450.
Nottingham Children's Hospital.—Female H.P. and Anæs. for six mths. At rate of £250 p.a.
Nottingham City Asylum.—Locum Tenens for two mths. £7 7s. per wk.
Plymouth, South Devon and East Cornwall Hospital.—H.P. £200.
Portsmouth, Royal Portsmouth Hospital.—H.S. £200.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Asst. Res. M.O. for six months. At rate of £60 p.a. Also Physician in Charge of Ante-Natal Department.
Royal College of Surgeons of England.—Examiner in Dental Surgery.
Royal Free Hospital, Gray's Inn-road, W.C.—Female H.P. & Cas. H.S.
Royal London Ophthalmic Hospital, E.C.—Third H.S. £100.
St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum, City-road, London, E.C.—H.S. £250.
St. Pancras, Parish of.—Asst. Med. Supt. of House and South Infirmary. £300.
Sheffield Royal Infirmary.—H.S. £120.
Wigan Infirmary.—Sen. H.S. (£250) and Jun. H.S. (£225) or Surgical Dresser (£150).
York County Hospital.—Female H.P. £200.

Births, Marriages, and Deaths

BIRTHS.

CARMICHAEL.—On June 18th, at The Elms, East Hill, London, S.W., the wife of Dr. Henry Carmichael, of a son.
CROKER.—On June 12th, at a private nursing home, Dublin, the wife of Captain W. P. Croker, R.A.M.C., of a daughter.
MACDONALD.—On June 22nd, at Westbourne-road, West Kirby, Cheshire, the wife of Captain Alex. T. Inglis Macdonald, R.A.M.C., of a daughter.
ROY.—On June 23rd, at York Lodge, Beaconsfield, the wife of Captain D. W. Roy, F.R.C.S. Eng., R.A.M.C., of a daughter.
SMYTH.—On June 17th, the wife of Surgeon G. J. C. Smyth, R.N., R. W. Hospital, Granton, Edinburgh, of a son and daughter.
WALKER.—On June 20th, at Regent-street, Nottingham, the wife of Russell E. Walker, F.R.C.S.E., Peterborough, temporary Captain, R.A.M.C., of a daughter.

MARRIAGES.

COLE—RILEY.—On June 20th, at St. Bride's Church, E.C., Captain H. A. Cole, M.C., R.A.M.C., to Grace Ethel, second daughter of Mr. C. A. Riley.
MELVILLE—GRIFFIN.—On June 1st, at All Saints Church, Bordighera, Italy, Kenmure Duncan Melville, M.D., Edinburgh, temporary Captain, R.A.M.C., to Martha Jane, elder daughter of Mr. and Mrs. Benjamin Griffin, Carnew, Ireland.
WINDER—SWAYNE.—On June 20th, at St. Peter's, Cranley-gardens, S.W., Captain A. S. M. Winder, R.A.M.C., to Helen Mary, only child of Colonel and Mrs. H. G. G. Swayne, R.E. (ret.).
YELLOWLEES—DAVIS.—On June 15th, at Pagham, Sussex, Henry Yellowlees, Captain, R.A.M.C., to Dorothy, daughter of Captain A. J. and Mrs. Davis.

DEATHS.

CROUCHER.—On June 15th, at a nursing home in London, Alexander Richard Croucher, M.D. St. Andrews, M.R.C.S. Eng., L.S.A. Lond., aged 82 years.
HUNT.—On June 21st, George Angus Hunt, M.R.C.S. Eng. and L.R.C.P. Edin., aged 64.
LEPPER.—On June 19th, at Warrington Lodge, Winifred Emmeline Lepper, M.B., B.S., B.Sc. Lond.
MARSH.—On June 23rd, at the Alexandra Nursing Home, Finsbury Park, Edwin Addison Marsh, L.R.C.P., L.R.C.S., L.S.A. Lond. and Edin., aged 68 years.
O'FLYNN.—On June 16th, abroad, of acute appendicitis, Captain Dominick T. O'Flynn, R.A.M.C., late of Hanwell County Asylum, London, aged 35 years.
PLIMMER.—On June 22nd, at Combe Bank, Sevenoaks, Henry George Plimmer, F.R.S., Professor of Comparative Pathology at the Imperial College of Science, aged 61.
PRESTON.—On June 7th, of wounds received the same day, Captain (temporary Lieutenant-Colonel) Richard Amyas Preston, M.C., R.A.M.C., aged 27 years.
SLIMON.—On June 18th, suddenly, at New Cavendish-street, W., William Henry Slimon, M.D., J.P., aged 67.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

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Diseases of the Digestive Organs, with Special Reference to their Diagnosis and Treatment. 2nd ed. By C. D. Aaron, M.D. $7.

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THE LANCET, VOL. I., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of June 29th is in preparation. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a *post-card* (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

Offices: 423, STRAND, LONDON, W.C. 2.

Communications, Letters, &c., to the Editor have been received from—

A.—Australian Imperial Force, Lond., D.M.S. of; Dr. G. R. Anderson, Southport.
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N.—National Baby Week Council, Lond.
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PNEUMONIC PLAGUE IN EAST ANGLIA.—Two deaths from pneumonic plague are reported as having occurred at Erwarton, East Suffolk, a village with 183 inhabitants nine miles from Ipswich. The fatal cases were both in women who occupied a pair of semi-detached cottages in an isolated area. In THE LANCET of Nov. 5th, 1910, the statement was made that plague amongst rats was somewhat widely distributed in one corner of Suffolk. This outbreak was checked, but plague reappeared in Suffolk in the following year (see THE LANCET of Nov. 19th, Dec. 31st, 1910, Sept. 2nd, and Nov. 4th, 1911).

THE LATE PROFESSOR POZZI.—Our Paris correspondent adds a few personal details in addition to those published last week. Pozzi was the son of a pastor of Italian origin who had 12 children. His coolness after receiving his fatal injury was remarkable. He insisted on spinal anæsthesia in order that he might himself follow the details of the operation. Twelve intestinal perforations were sutured with success, but on releasing a coil of intestine from the pelvis a sudden violent hæmorrhage occurred which proved rapidly fatal. The interment took place at his native town of Bergerac.

Notes, Short Comments, and Answers to Correspondents.

THE EDITH CAVELL HOME.

THE Edith Cavell Home for Nurses at the London Hospital was opened for the first contingent of occupants on June 10th. The five-storeyed building will accommodate 12 sisters, 110 nurses, 12 servants, and a porter, and each of the female occupants, including the servants, will have a separate room. Everything has been provided for the comfort of the occupants, and on the ground floor there is a visitors' room where the nurses may receive their friends, a "home atmosphere" being thus given to the institution. In the nurses' sitting-room is the bust of Edith Cavell, by Sir George Frampton, and at one end of the room is the following inscription:—

"This Home was erected in commemoration of Nurse Edith Cavell, shot by the Germans, Oct. 12th, 1915. If there be moments when we are tempted to be faint-hearted let us consider what year in our history has done most to justify our faith in the manhood and womanhood of our people. It has brought us the imperishable story of the last hours of Edith Cavell. It has taught the bravest man amongst us the supreme lesson of courage. In this United Kingdom and Empire there are thousands of such women. A year ago we did not know it. We have great traditions; let us be worthy of them and endure to the end. —Prime Minister, Mr. H. H. Asquith, in the House of Commons, Nov. 5th, 1915."

Towards the cost of the Home subscriptions have come from every corner of the Empire as well as from neutral countries, and from every class. The readers of the *Daily Mirror* have subscribed £10,000, but there still remain £20,000 to pay off the debt on the £37,000 which the Home has cost.

MUSCULAR WASTING IN INTERNAL DERANGEMENT OF THE KNEE.

Dr. T. B. Broadway writes that in his experience on recruiting medical boards one of the commonest disabilities noted is internal derangement of the knee-joint. In regard to its diagnosis he says:—

My colleagues laid stress on the history of fixity, of sudden swelling and restricted movement, and inability to perform certain movements. Another symptom present if the derangement has been of any duration is often missed—namely, the wasting of the muscles of the thigh, especially those supplied by the obturator and anterior crural nerves, which also supply the joint. I have also noticed fine tremors in the muscles after the fully extended leg has been pressed hard against an object for 5 to 15 minutes. No other nervous symptoms are present, reflexes are normal, and there is no loss of, or exaggeration of, superficial or deep sensations, nor is the affected limb any colder than its fellow. For some unexplained reason the calf on the disabled side hypertrophies. The patient can generally walk well on a good road, and has no difficulty with any gymnastic exercises except jumping and lowering himself on the toes with everted feet.

CONVERTING OUNCES INTO GRAMMES.

To the Editor of THE LANCET.

SIR,—As I see that my note in THE LANCET of Jan. 12th on converting grains into grammes has been copied into other technical journals, these short cuts are probably appreciated. Here is another for converting ounces avoirdupois into grammes. Multiply the ounces by 7, and then that product by 4, and add in one-hundredth of the first and second products. For example: 8 oz. to grammes, 8 × 7 equals 56, which multiplied by 4 equals 224. Add in 0·56 and 2·24, giving a total of 226·80 grammes, the answer. (This is equivalent to multiplying by 28·35, the conversion factor usually given.)

I am, Sir, yours faithfully,
F.

June 18th, 1918.

REPAIRS OF COOLIDGE X RAY TUBES.

THE British Thomson-Houston Co., Ltd., of Mazda House, 77, Upper Thames-street, London, E.C., have adopted a plan by which the delays in connexion with the repairs of Coolidge tubes are overcome and the expense of replacing the damaged tube is minimised. In each case of a Coolidge tube returned for repair a form is supplied to be filled in, giving the particulars as to the use the tube has received, the conditions of service, and details concerning the tube's failure. On receipt of this information the company's representatives examine the tube, which is then classified in one of four classes of repairs quoted. The tube is then broken up and the essential parts are packed for return to the Schenectady Factory, U.S.A., for repair, while an immediate replacement is made with a tube taken from stock of repaired tubes kept for the purpose. This method obviates the delay and reduces the expense hitherto involved in despatching each tube to the States for repair and return. The system should prove of great convenience to X-ray workers.

THE NATION'S FUND FOR NURSES.

A garden party in aid of the Nation's Fund for Nurses will be held at St. James's Palace on July 9th, at 3 P.M. The Palace has been lent for the purpose by the King, and on the terrace living friezes from Shakespeare, Botticelli, Augustus John, and Chu-Chin-Chow will be presented, all tastes apparently being catered for. Tickets, limited in number, (including tax) 5s. before the day, 10s. on July 9th, at the British Women's Hospital, 21, Old Bond-street, W.

FIRST-AID IN AFFECTIONS OF EAR, NOSE, AND THROAT.

IT may well be that for many years after peace is proclaimed the general standard of health will be lowered by the aftermath of war. The common accidents of life will tend to increase at the same time that the speeding-up in factories intensifies the liability of industrial mishap, the dearth of doctors meanwhile hindering prompt medical attention. The enhanced value of knowing what is best to do "till the doctor comes" was referred to by Sir Thomas Barlow, who presided at the sixth of the series of lectures on first-aid at the College of Ambulance (3, Vere-street, London, W.) on June 20th. With regard to the doctor himself, he added that the examination of the ear and the treatment of ear troubles was a patent defect in present-day medical education. To know what is the matter, how to examine, and what are the signs of disease are a large part of the urgent need. The lecturer, Mr. Herbert Tilley, surgeon to the Ear and Throat Department of University College Hospital, after sketching the anatomy of the ear, nose, and throat, dwelt on the serious after-effects of neglect in treating the many accidents and diseases to which these parts of the body are liable. He went on to show how efficient first-aid can be rendered. At the same time he warned his audience to call in medical aid as soon as possible, especially in cases of sore-throat in children, so often a sign—as Colonel Hunter had already emphasised in a previous lecture—of infectious fever. He illustrated the risk of neglecting even the most trivial accident by citing four cases from his personal experience of the past 12 months, in which death was the result simply of a slight scratch on the nose.

DECIMAL COINAGE AND MEASUREMENTS.

THE second reading of the Coinage (Decimal System) Bill, which seeks to amend the Coinage Acts of 1870 and 1891 by substituting a decimal coinage for the present system, was moved in the House of Lords by Lord Southwark on June 4th, and although a motion for adjournment was carried, the members of the Decimal Association are not likely to cease their efforts. The contention is unassailable that much valuable time is lost and trade and commerce injured by the continued use of a complicated and inconsistent system of weights and measures, especially for international purposes. Opponents of the system maintain that any alteration of the existing state of things would cause much public inconvenience, and if this is true, the Decimal Association should spare no pains in popularising the decimal system. The little metal rule of which we give an illustration, issued by the Association in a pocket case for 1s. post free, should serve, in Lord Kelvin's words, as a useful "key to the metric system." Fig. 1 illustrates one decimetre (one cubic decimetre of water weighs one kilogramme and measures one litre), and Fig. 2 shows a rule one millimetre thick, one centimetre wide, one decimetre long; its weight in grammes is the specific gravity. We found that the weight of the rule was 7·98 grammes, and that figure coincides with the specific gravity of steel. The address of the Association is 212-213, Finsbury Pavement House, London E.C. 2.

FIG. 1.

FIG. 2.

MODIFIED APHORISMS.

THE medical man in command of a convalescent depôt somewhere in France has two sign-boards at the entrance to the camp, which run as follows:—

(M)ARS LONGA VITA BREVIS	DUM SPIRO —"CHEERIO"

PROGNOSIS—A PARALLEL.

To the Editor of THE LANCET.

SIR,—I think it was Hippocrates who suggested that prognosis is difficult, but it is perhaps easier in pneumonia than in many other illnesses. In pneumonia it is based at the onset upon such factors as the extent of the lesion, the general condition of the patient in respect of hereditary constitution and personal habits, and on a consideration of these the clinician may grade the patient in accordance with the expectation that he will (1) very probably recover; (2) stand a good chance of doing so; (3) run a considerable risk of his life. Rarely will he say (4) that the patient will probably die. In pneumonia, however, prognosis is also based upon the age of the patient: with increasing years it becomes steadily worse. Given the same general condition in each case the clinician may be justified in grading (1) the man of 25; in grading (2) the man of 35; in grading (3) the man of 45; and in grading (4) the man of 55. To decide who is a likely fighting unit against the hordes of pneumococci prognosis based on the first factor alone seems to have no meaning. "If you were 35 you would probably recover," says Sir Auckland Geddes, M.D. "But I am 45 and I run a considerable risk," replies the patient.

I am, Sir, yours faithfully,

June 24th, 1916. RETROGRADE.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
Wednesday, July 3rd.

ANNUAL GENERAL MEETING: at 5.30 P.M.
Election of Officers and Council for 1918-1919.
Presidential Address by Sir Rickman J. Godlee, Bt.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.
THURSDAY, July 4th.—8.15 P.M., Cavendish Lecture:—Maj.-Gen. Sir Bertrand Dawson: The Future of the Medical Profession.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, July 1st.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY, July 1st.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
WEDNESDAY, July 3rd.—4 P.M.:—Dr. Noel D. Bardswell: Some Aspects of the Problem of the Consumptive Worker.

In the Laboratories of the Institute.
Course of Special Demonstrations and Discussions on Venereal Disease in connexion with the work of the Venereal Diseases Department:—
WEDNESDAY.—2.30 P.M., Demonstration VI.:—Mr. J. E. Barnard: Medical Microscopy with special reference to Dark Ground Illumination.

COLLEGE OF AMBULANCE, 3, Vere-street, Cavendish-square, W.
Course of Special Lectures and Demonstrations on Ambulance Work and First Aid (illustrated as far as may be possible and followed by a Discussion).
THURSDAY, July 4th.—4.30 P.M., Lecture VIII.:—Mr. William Henry: The Work of the Royal Life Saving Society.

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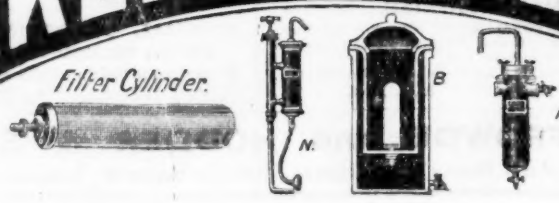

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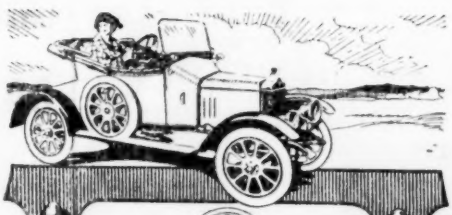

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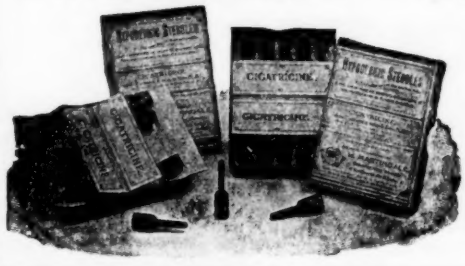

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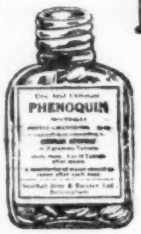

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Each tablet contains 1 grain of both Potassium and Calcium Glycerophosphate, ½ grain of Lecithin and ¼ grain of Nuclein. These drugs have the effect of stimulating the metabolic processes and the disease-resisting powers of the body, they appear to increase the number of red blood corpuscles and the percentage of hæmoglobin, and exert a direct tonic influence upon the nervous system. One or two tablets should be taken thrice daily after food.

Nucleo-proteid Compound Tablets (P., D. & Co.), No. 479, chocolate-coated, are supplied in bottles of 100 at 4/- per bottle.

Ovarian Insufficiency

The writer of an article in *The Medical Record* of May 19, 1917, states that the EXTRACT OF CORPORA LUTEA is the best remedy for the relief of the nervous symptoms of the natural menopause, and for their prevention and relief in postoperative menopause. It must be given over a long period and in sufficient dosage, according to the need of the patient. It is of great value in the irregular or scanty menstruation of young women, and the neurasthenic symptoms often associated therewith. Dysmenorrhœa in young girls and nulliparæ, if not due to a pathological lesion, is often relieved by this drug, as also is nausea or vomiting in pregnancy.

Corpora Lutea, Soluble Extract (P., D. & Co.), for intramuscular injection, is supplied in ampoules of 1 c.c. at 6/- per box of 6 ampoules.

Corpora Lutea, Desiccated (P., D. & Co.), for oral administration, is supplied in bottles of 1 ounce at 1/4/- per bottle. Capsules containing 5 grains of the powder are supplied in bottles of 25 at 6/-, and in bottles of 100 at 20/- per bottle.

Local Applications in Hay Fever

J. M. Brown, Professor of Laryngology in the Dearborn Medical College, Chicago, has reported several cases of chronic hay fever successfully treated with ADRENALIN INHALANT, administered as a spray to the nares and pharynx. Another preparation which is useful for local application in cases of hay fever is ADRENALIN AND CHLORETONE OINTMENT, which possesses constringent, analgesic, antiseptic, and emollient properties.

Prior to using either of the above-mentioned, the nasal passages should be freed from mucus by a solution of one NASAL TABLET (P., D. & Co., No. 34) in four ounces of tepid water. The treatment may be repeated at intervals of four hours if necessary.

Adrenalin Inhalant (P., D. & Co.) is supplied in bottles of 1 ounce at 4/6 per bottle, the "Glaseptic Nebuliser" for spraying the inhalant at 5/-. Adrenalin and Chloretone Ointment in collapsible tubes at 3/2, and Nasal Tablets (P., D. & Co.) at 1/9 per bottle of 100.

A Prompt Anodyne and Antispasmodic

A combination of sedatives, carminatives, and diffusible stimulants which may be relied upon for a speedy effect is a frequent requirement in the gastro-intestinal disorders of summer time. CHLOR-ANODYNE (P., D. & Co.) provides such a combination in a concentrated form. Ten minims of the preparation contain 1/16 grain of Morphine Hydrochloride, 1 minim of Fluid Extract of Cannabis Indica, 1 minim of Chloroform, 1/5 minim of Diluted Hydrocyanic Acid, 1/32 minim of Tincture of Capsicum and of Oil of Peppermint. The fluid extract of cannabis indica in the formula permits of obtaining a satisfactory anodyne effect with only a small dose of morphine.

Chlor-Anodyne quickly controls abdominal pain and cramp; it is a valuable auxiliary in the treatment of intestinal colic, flatulence, cholera morbus, &c. The dose for an adult is from 5 to 15 minims, repeated, if necessary, in half an hour.

Chlor-Anodyne (P., D. & Co.) is supplied in bottles of 1, 4, 8, and 16 fluid ounces at 1/3, 3/4, 6/3, and 12/- per bottle.

Resuscitation of an Apparently Dead Infant

In *The Therapeutic Gazette* for August, 1917, there appeared a report of a case in which the physician arrived five minutes after the child was born, only to find it to all appearances dead, the cord evidently having been prolapsed for some minutes before the birth. Auscultation revealed no sign of heart-beat.

The physician, remembering to have heard that Pituitrin started the heart beating in a child whose mother died just before delivery, injected 0·5 c.c. of PITUITRIN into the child's hip, immersed it in warm water, and applied tongue traction. In a quarter of an hour the heart-beat was discernible, it gradually gathered strength, and before long the infant was crying lustily.

Pituitrin (P., D. & Co.) is supplied in ampoules of 0·5 c.c. at 2/3 per box of 6, and 4/- per box of 12; also in ampoules of 1 c.c. at 4/- per box of 6, and 6/9 per box of 12.

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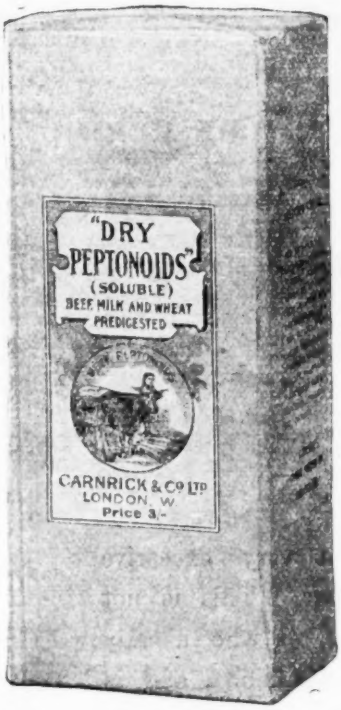

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Taken from a résumé of a Report to the LOCAL GOVERNMENT BOARD *on Dried Milks, by F. J. H. Coutts, M.D., B.Sc., D.P.H. (New Series No. 116, Food Reports, No. 24), with special reference to their use in Infant Feeding:—*

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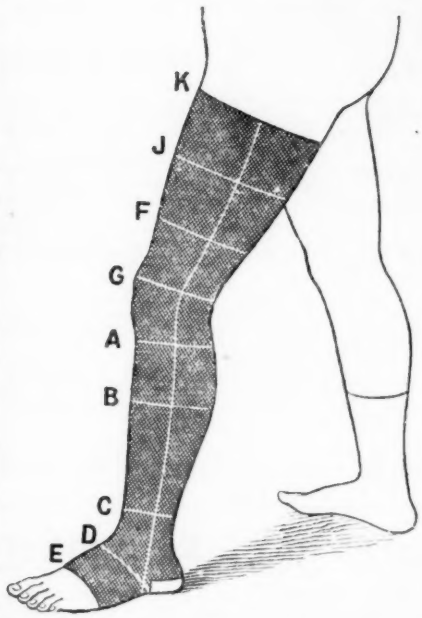

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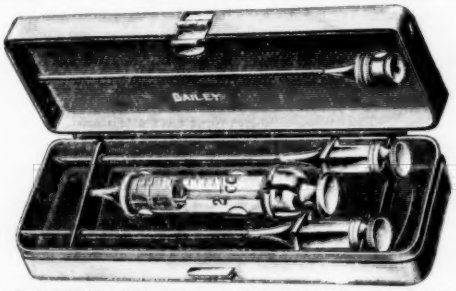

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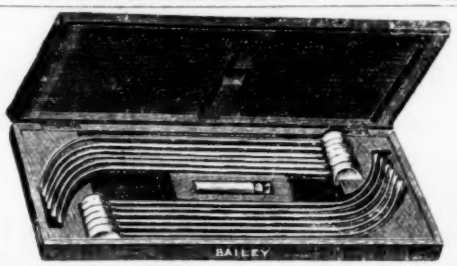

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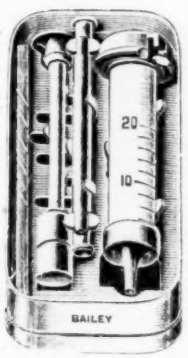

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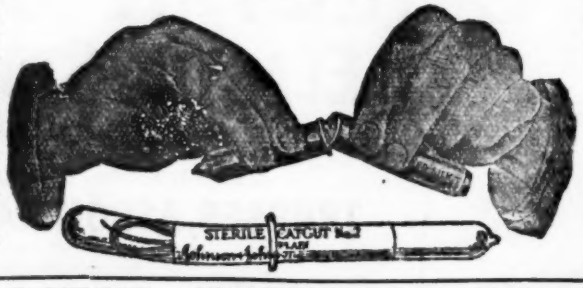

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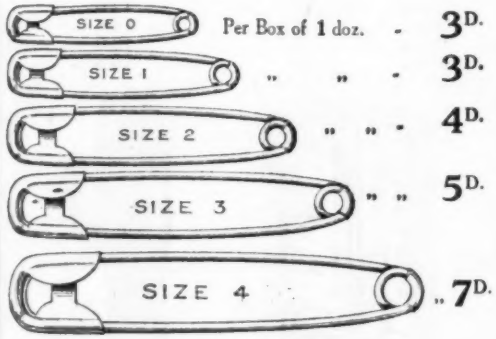

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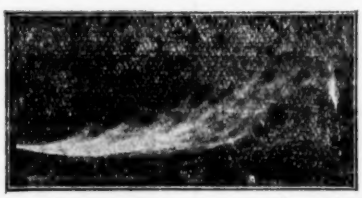

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For particulars apply to DANIEL F. RAMBAUT, M.A., M.D., the Medical Superintendent. TELEPHONE No. 56.

ASHWOOD HOUSE

KINGSWINFORD, STAFFORDSHIRE.

An old-established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.

Full particulars as to reception, terms, &c., may be obtained from the Resident Medical Officer.

SPRINGFIELD HOUSE

Near BEDFORD (Telephone No. 17)

A PRIVATE HOME for MENTAL CASES

Terms from 3½ guineas per week.

Apply to DAVID BOWER, M.D.

STRETTON HOUSE,

Church-Stretton, Shropshire.

A Private HOME for the treatment of Gentlemen suffering from Mental Diseases. Bracing hill country. See "Medical Directory," p. 2119. Apply to Medical Superintendent. Telephone: 10 P.O. Church-Stretton.

Grove House, All Stretton, Church STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

Telegraphic Address: "Relief, Old Catton." Telephone: "290 Norwich."

NERVOUS & MENTAL AFFECTIONS.

Ladies only received.

The Grove, Old Catton, Norwich.—A High-class Home for the Curative Treatment of Nervous Affections. Voluntary Boarders are also received without certificates. Nurses supplied to take charge of patients under the care of their own medical attendants. For full particulars apply to the Misses McLINTOCK, or to CECIL A. P. OSBURNE, F.R.C.S.E., Medical Superintendent.

PORTSMOUTH CORPORATION MENTAL HOSPITAL.

Provision for PRIVATE PATIENTS has just been provided in two detached Villas.

Inclusive charges from £1 11s. 6d. per week.

Apply to the Medical Superintendent.

BARNWOOD HOUSE HOSPITAL FOR MENTAL DISEASES near BARNWOOD, GLOUCESTER

Exclusively for private Patients of the Upper and Middle Classes. This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to J. G. SOUTAR, M.B., the Med. Supt. [Tel. No. 7.

THE MOAT HOUSE, TAMWORTH, STAFFORDSHIRE.

Stations: L. & N. West. and Mid. Railways.

The House is devoted to the care and treatment of a few Ladies suffering from Nervous and Mental Affections, who enjoy the comfort, privacy, and occupations of home life. For terms, &c., apply to the Resident Licensees, EDWARD HOLLINS, M.A. Cantab., or (Mrs.) S. A. MICHAUX.

THE COPPICE, NOTTINGHAM.

HOSPITAL FOR MENTAL DISEASES.

President: The Right Hon. the EARL MANVERS.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted.

For terms, &c., apply to the Medical Superintendent.

HOME FOR FEEBLE-MINDED,

BRUNTON HOUSE, LANCASTER.

There are now a few vacancies in this well-appointed private establishment. It is easily accessible from Lancaster, overlooks Morecambe Bay, and possesses extensive gardens and grounds, with tennis and croquet lawns. Varied scholastic and manual instruction. Individual attention is given to pupils by experienced staff under a Resident Physician and Lady Matron. Terms on application to Dr. W. H. COUPLAND.

BISHOPSTONE HOUSE, BEDFORD.

Telephone 708.

Private Home for Mentally afflicted Ladies; ten only received.

Terms from 4½ gns. weekly.

Apply, Medical Officer, or Mrs. Peele.

THE WARNEFORD, OXFORD.

HOSPITAL FOR MENTAL DISORDERS.

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL FOR THE CARE AND TREATMENT OF MENTAL AND NERVOUS CASES OF BOTH SEXES EITHER VOLUNTARY OR UNDER CERTIFICATES, preference being given to Recoverable Cases.

Terms from £2 2s. per week upwards. Private Apartments on special terms.

Situated mid way between Manchester and Liverpool. Two miles from Newton-le Willows Station on the L.& N.W.Rly., and close to Ashton-in Makerfield Station on the G.C.Rly. in direct communication with Manchester.

CONSULTING ROOMS (Dr. Street), 47, Rodney Street, Liverpool, from 2 to 4 P.M., or by appointment. Telephone: 2458 Royal Liverpool. Manchester (Dr. Mould), Winter's Buildings, St. Ann Street, on Tuesdays and Thursdays, from 12 to 1.30 P.M., or by appointment.

VISITING AND CONSULTING PHYSICIANS.—Sir JAMES BARR, LL.D., M.D., F.R.C.P., 7a, Rodney Street, Liverpool; W. B. WARRINGTON, M.D., F.R.C.P., 83, Rodney Street, Liverpool; G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Medical Proprietor, Haydock Lodge, Newton-le-Willows, Lancs.

Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11 Ashton-in-Makerfield.

CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON." Telephone New Cross 1057.

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary

Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

HOVE VILLA, BRIGHTON—A Convalescent Branch of the Above.

PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

Telegrams: "Alleviated, London." Telephone: New Cross 576.

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

SHAFTESBURY HOUSE

Formby-by-the-Sea, LANCASHIRE.

FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN MENTALLY AFFLICTED, Certificated or otherwise.

Dr. STANLEY GILL or Dr. HAYES GILL may be consulted at 31, RODNEY ST., LIVERPOOL, from 2 till 4 P.M. every Monday and Thursday.

For terms, &c., apply to STANLEY A. GILL, M.D., M.R.C.P. Lond. Telephone—No. 8 FORMBY.

NORTHWOODS HOUSE

WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES.

Situated in a large park in a healthy and picturesque locality, easily accessible by rail viâ Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2053. Terms moderate.

Apply to Dr. J. D. THOMAS, Resident Physician and Licensee, for full particulars.

VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.

For particulars apply to Resident Superintendent, Llanbedr Hall, Ruthin, North Wales.

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

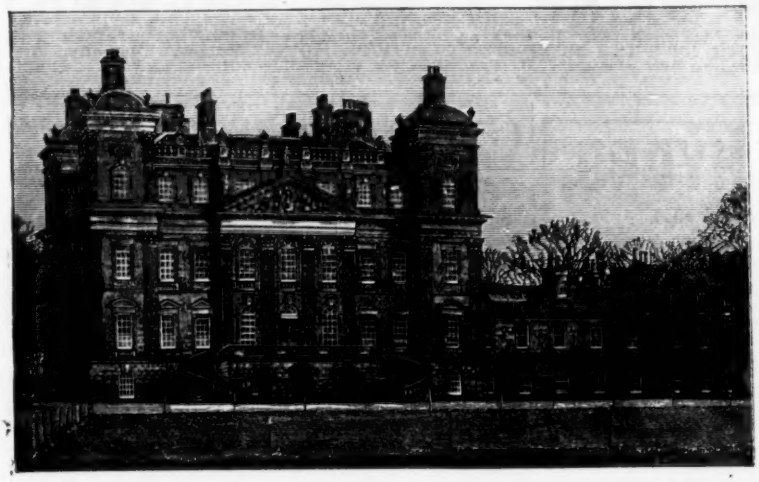
DARTMOOR SANATORIUM. 750 FEET.

TUBERCULIN USED ONLY FOR SUITABLE CASES.

WITHIN EASY REACH OF THE MOOR.

Resident Physicians—C. H. BERRY, M.R.C.S., L.R.C.P.; Dr. J. M. WALL.

For particulars, apply C. H. BERRY, M.R.C.S., Sanatorium, Chagford, Devonshire. Telephone: 11 Chagford.



DUFF HOUSE, BANFF, SCOTLAND.

TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, Central Heating, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate châlets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3½ guineas weekly. For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.

INEBRIETY.

[Telephone: 16 Rickmansworth.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. All kinds of out-door and in door recreations and pursuits.—For particulars, apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.

It has been authoritatively stated that, as a result of developments now taking place, the British Spas will become places of European Resort.

BATH
Radio Active Waters

BUXTON
The Mountain Spa

CHELTENHAM
The Spa in the Cotswolds

DROITWICH
Natural Brine Baths

HARROGATE
Pennine—protected from Wet Winds

WOODHALL SPA
Lincoln Cathedral

The choice of both waters and climates is so wide and the Medical Service so thoroughly adapted to present-day needs, that the leading British Spas at least now have a European recognition greater than ever before.

As being most closely identified with the latest scientific developments, these Famous Six Spas deserve every Medical Man's notice. The range of ailments successfully treated is most comprehensive.

Particulars of any Spa will be forwarded, on request, by the Spa Manager of that Spa, or of all Six Famous British Spas by F. J. C. BROOME, Spa Federation Secretary, HARROGATE.

P.C.B.—77

DROITWICH BRINE BATHS WARNING.

The Public are warned that the full benefits of the treatment for Rheumatism and kindred complaints **CAN ONLY BE OBTAINED IN THE NATURAL BRINE BATHS AT DROITWICH, FOR WHICH THERE IS NO SUBSTITUTE.** LOVELY HOLIDAY DISTRICT. GOOD HOTELS, &c. Illustrated Booklet Post-free from Baths Manager, J. H. HOLLYER, 46, Spa Enquiry Offices, Droitwich (Worcs.). SPECIAL FACILITIES TO MEDICAL MEN.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Physicians: G. C. R. Harbinson, M.B., B.Ch.
R. MacLelland, M.D., C.M. (Edin.)

Prospectus and full information on application to Managing Director.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88.
Telegrams: "HYDRO, CATERHAM."

Resident Physician:
A. B. OLSEN, M.D., D.P.H.

INEBRIETY

MELBOURNE HOUSE, LEICESTER
PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat. Telephone: 769.

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind.

Terms moderate. Apply to Resident Medical Superintendent.
Telegrams: ADAM, WEST MALLING. Telephone: No. 2 MALLING

Resident Patients.—Descriptive List

(Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C.2.

MENTAL CASE, MALE, CERTIFIED.

Home required in quiet neighbourhood,

with garden.—Reply, stating terms, to *No.* 699, THE LANCET Office, 423, Strand, W.C.2

HEXHAM, NORTHUMBERLAND.

Doctor's Daughter and Partner (skilled

Masseuse) desire care of INVALIDS (other than mental or epileptic) in their Country Rest Home, twenty-two miles Newcastle. Radiant Heat and Electrical Treatment. Resident Trained Nurse. Garden. 'Phone 192. Terms, &c., The Misses Crease & Turner.

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

Littleton Hall, Brentwood, Essex

(400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations: Brentwood one mile; Shenfield one mile. Voluntary Boarders received. Vacancy.—For terms, &c., apply Dr. Haynes. Telephone and Telegrams: Haynes, Brentwood 45.

Brighton. — Charming Residence

(4 acres pleasure grounds). — Massage, Electrical, Nervous Diseases, Chronic, Convalescent, and Rest Cure cases received. Bungalow in grounds. Suitable for any case.—Dr. Holmes Meyrick, Sylvan Hall, Upper Lewes-road. Telephone: 362 Brighton.

Nursing Home Wanted.—Business

man in indifferent health requires Home to which he can retire occasionally for short periods for resuperation and medical treatment. Nottinghamshire, South Derbyshire, or Leicestershire. — Address, No. 700, THE LANCET Office, 423, Strand, W.C.2.

Brighton. — The Royal Alexandra

HOSPITAL for SICK CHILDREN (61 beds). — A HOUSE SURGEON required. Salary at the rate of £100 a year, with board, lodging, and washing. Good experience. Ample time for study. No canvassing allowed. Further particulars may be obtained of

A. F. GRAVES, Secretary.

University of Birmingham.—Faculty

OF MEDICINE. — SENIOR DEMONSTRATORSHIP IN ANATOMY.—Applications are invited for the post of Senior Demonstrator of Anatomy. Stipend commencing at £250 per annum, and rising by annual instalments to £300. Applications, with testimonials, should be sent to the undersigned, from whom further particulars may be obtained.

GEO. H. MORLEY, Secretary.

Great Northern Central Hospital,

Holloway, London, N.—Applications are invited for the post of CASUALTY OFFICER. Male or Female (Male candidates must be ineligible for Military Service). The appointment is for six months, with salary at the rate of £150 per annum, with board, residence, and laundry.

Particulars and forms of application may be obtained from the undersigned.

Applications, and copies of testimonials, should be sent as soon as possible to

GILBERT G. PANTER, Secretary.

Hampstead General Hospital, Haverstock Hill, N.W.3.

—Appointment of HOUSE PHYSICIAN. Vacancy for this position will occur on July 1st next.

The salary will be at the rate of £200 per annum, together with the usual allowances.

Candidates, who must be registered Medical Practitioners, should apply to the Secretary, stating qualifications, experience, and age. Copies of not more than three testimonials should accompany application. The appointment will be for a period of six months.

20th June, 1918.

Queen Charlotte's Lying-in Hospital,

Marylebone.—PHYSICIAN in Charge of Ante-Natal Department.—The Committee of Management invite applications for the appointment of Physician in Charge of the Ante-Natal Department. Candidates (Male or Female) must be Graduates in Medicine of a University of the United Kingdom, or (a) Fellows or Members of the Royal College of Physicians of London, or (b) Fellows of the Royal College of Surgeons of England.

Applications should be sent to the undersigned, from whom further particulars may be obtained.

24th June, 1918. ARTHUR WATTS, Secretary.

Queen Charlotte's Lying-in Hospital,

Marylebone road, N.W. 1.—ASSISTANT RESIDENT MEDICAL OFFICER, Male (ineligible for Military Service) or Female, required. Applicants must be registered. The appointment is for six months. The selected candidate will be expected to proceed to the appointment of Senior Resident Medical Officer (also for six months or longer, as may be arranged) at the end of the term of office on the recommendation of the Medical Staff. The salary of the Assistant Resident Medical Officer is at the rate of £60 per annum, and of the Senior Resident Medical Officer £100 per annum, with board, residence, and washing.

Applications, with copies (not originals) of not more than three testimonials, will be received by the Secretary up to 3rd July.

Canvassing is prohibited. Duties to commence on or about July 15th.

ARTHUR WATTS, Secretary.

Dudley Dispensary. — Resident

MEDICAL OFFICER required. Must hold a Medical and Surgical qualification and be registered. Required to attend to Medical and Surgical cases under superintendence of Honorary Medical Officers and to visit patients at their homes within one mile of the parish church. Private practice prohibited. Salary £250. Three months' notice required to terminate agreement. An Assistant Dispenser is provided. Good house (furnished except beds and bed- and house linen) and water found, and rates and taxes paid. Will be required to commence duties as soon as possible after appointment. Applications, with testimonials, giving full particulars, to be sent to me before the 11th July. The election will take place about the 19th July.

Dudley, 19th June, 1918. A. B. WHITEHOUSE, Hon. Sec.

Corporation of Manchester.—Applica-

tions are invited for the post of TEMPORARY ASSISTANT TUBERCULOSIS OFFICER for the City of Manchester, at a salary of £450 per annum.

Candidates must be fully qualified medical practitioners, ineligible for Military Service, having special knowledge of Medical and Surgical Tuberculosis.

Applications, stating age, qualifications, and experience, and endorsed on the envelope "Assistant Tuberculosis Officer," must be addressed to the Town Clerk only (and not to members of the Committee or Council), and be accompanied by not more than three recent testimonials.

Canvassing in any form, oral or written, direct or indirect, is prohibited. THOMAS HUDSON, Town Clerk.

Town Hall, Manchester, May 2nd, 1918.

The Hospital for Sick Children,

Great Ormond-street, London, W.C.1.—A HOUSE SURGEON is required on the 24th July, 1918.

Candidates, Male or Female, are invited to send in their applications, addressed to the Secretary, as soon as possible, with copies of not more than three testimonials given specially for the purpose, and also evidence of their having held a responsible hospital appointment.

The appointment is made for a minimum period of six months. Salary at the rate of £100 per annum, washing allowance £5 per annum, and board and residence in the Hospital.

Candidates must possess a legal qualification to practise, and be ineligible for Military Service.

Candidates may be required to attend before a meeting of the Joint Committees.

Forms of application can be obtained from the Secretary.

By order of the Committee of Management.

June, 1918. JAMES MCKAY, Acting Secretary.

St. Mark's Hospital for Cancer,

FISTULA, and other DISEASES of the RECTUM, City-road, London, E.C. 1. — HOUSE SURGEON wanted at once, Lady or Gentleman. Salary at the rate of £250 per annum. Must be doubly qualified. Board, lodging, and washing provided. Applications, stating essential particulars, should be sent to the Secretary, at the Hospital, immediately.

The Royal Infirmary, Sheffield (363

beds, of which 133 are Military).—Wanted, a HOUSE SURGEON (Male, ineligible for Military Service, or Female), who must be fully qualified and registered.

Salary £120 per annum, with board and residence, rising after three months to £150.

Applications, with copies of recent testimonials, to be addressed to me immediately.

By order.
JNO. W. BARNES, Secretary.

National Hospital for the Paralysed

and EPILEPTIC, Queen-square, W.C. 1.—The Board of Management are about to appoint a RESIDENT MEDICAL OFFICER for the Home for Discharged Neurasthenic Sailors and Soldiers, Bray Court, Maidenhead, and invite applications, which, accompanied by copies of recent testimonials, should be sent to the Secretary, National Hospital, Queen-square, W.C. 1, on or before July 1st.

The salary is £450 per annum, and the officer appointed will be required to take up his duties about the beginning of August.

South Devon and East Cornwall

HOSPITAL (189 beds).—The Committee invite applications for the appointment of a qualified HOUSE PHYSICIAN, Male (ineligible for Military Service) or Female. No age limit. To commence on July 1st. The duties will comprise Medical, Surgical and Anæsthetic work. Salary £200, with board, residence, and washing. Candidates should send copies of not more than three testimonials to the undersigned.

Plymouth, 7th June, 1918. P. J. LANGDON, Secretary.

Wigan Infirmary (beds: 120 Civilian,

60 Military).—Wanted, on July 18th, a SENIOR HOUSE SURGEON (£250 per annum) and a JUNIOR HOUSE SURGEON (£225) or SURGICAL DRESSER (£150). Candidates may be of either sex, but for a House Surgeonship must be doubly registered, and if men ineligible for Military Service. Board, apartments, and washing. Applications, stating position sought, age, and qualifications, with not more than three recent testimonials, to be sent to the undersigned at once.

HEDLEY LUCAS, Gen. Supt. & Secretary.

Bristol Royal Infirmary.—Applica-

tions are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

City of Manchester.—Second Assistant

MEDICAL OFFICER to the BAGULEY SANATORIUM for TUBERCULOSIS.—The Sanitary Committee require the services of a fully qualified Medical Officer, with experience in the treatment of Tuberculosis, to act as LOCUM TENENS.

Applicants must be unmarried, ineligible for Military Service, and conversant with bacteriological methods. The salary will be £400 per annum, with board and residence.

Applications, stating age, qualifications and experience, and endorsed on the envelope "Second Assistant Medical Officer, Baguley Sanatorium," must be addressed to the Town Clerk only, and not to members of the Committee or Council, not later than July 10th, 1918, and be accompanied by not more than three recent testimonials.

Canvassing in any form, oral or written, direct or indirect, is prohibited.

THOMAS HUDSON, Town Clerk.

Town Hall, Manchester, June 24th, 1918.

City of Manchester.—The Sanitary

Committee of the Corporation of Manchester require the services of a fully qualified Whole-time LADY MEDICAL OFFICER, with experience in the treatment of Children's Diseases, to hold (under the direction of the Medical Officer of Health) Consultations and Infant Clinics at the Maternity and Child Welfare Centres of the Manchester Corporation, and (under the like direction) to perform such other duties as appertain to the office.

The salary will be £400 per annum.

A statement of the duties and conditions of the office may be had on application, in writing, to the Medical Officer of Health, Civic Buildings, 1, Mount-street, Manchester.

Applications, stating age and experience, and endorsed on the envelope "Medical Officer, Child Welfare," must be addressed to the Town Clerk only, and not to members of the Committee or Council, not later than Friday, July 12th, 1918, and be accompanied by not more than three recent testimonials.

The successful candidate will be required to contribute to the Corporation Officers' Thrift Fund and to execute their Deed of Service.

Canvassing in any form, oral or written, direct or indirect, is prohibited.

THOMAS HUDSON, Town Clerk.

Town Hall, Manchester, June 18th, 1918.

City of Bradford.—Temporary Woman

ASSISTANT MEDICAL OFFICER wanted, to assist in School and Child Welfare Work. Salary 8 guineas per week. Apply, Medical Officer of Health, Town Hall, Bradford.

Cheltenham Eye, Ear, and Throat

FREE HOSPITAL.—Post of NON-RESIDENT ASSISTANT SURGEON will be vacant on August 1st. Salary £300. Knowledge of diseases of eye, ear, and throat necessary. Qualified Lady eligible. Apply, stating qualifications, to the Honorary Secretary.

Glamorgan County Asylum, Bridgend.

—Wanted immediately, Temporary ASSISTANT MEDICAL OFFICER. Must be ineligible for Military Service. Salary £6 6s. per week, with board, apartments, attendance, and laundry. Applications, stating age, with full particulars and copies of testimonials, to be sent to the Medical Superintendent.

Locum Tenens wanted for Devon and

CORNWALL SANATORIUM, Didworthy, South Brent, for four weeks, August 3rd to August 31st. Six guineas per week, hospitality, and travelling expenses not to exceed £3. Apply, Medical Superintendent.

Nottingham City Asylum. — Locum

TENENS wanted (Male) for about two months from the middle of July. Candidates must be registered under the Medical Act. Salary £7 7s. per week, with apartments, board, and laundry. Apply, stating age and other particulars, and enclosing copies of recent testimonials, to the Medical Superintendent.

Ashton-under-Lyne District

INFIRMARY, Lancashire (General Hospital of 180 beds, including beds for Military patients).—ASSISTANT HOUSE SURGEON wanted at once. Applications from fully qualified Ladies or Gentlemen are invited. Salary £200, with residence, board, laundry, &c.

FRANK OLIVER, General Superintendent & Secretary.

Leeds General Infirmary (520 beds).

—Wanted at once, OPHTHALMIC HOUSE SURGEON (Male or Female). Salary £50 per annum, with board, residence, and laundry. Six months' appointment.

Candidates must be legally qualified and registered.

Applications, with testimonials, should be addressed to the Infirmary.

FRED J. BRAY, General Manager.

Nottingham Children's Hospital.—

Wanted at once, HOUSE PHYSICIAN and ANÆSTHETIST (Medical Woman). Salary at the rate of £250 per annum, with apartments, board, and washing. The appointment will be for six months.

Applications, accompanied by testimonials, stating qualifications and experience, to be sent to the Secretary at 2, Church Gate, Nottingham.

Selected candidates will be required to attend at the hospital for a personal interview.

The Italian Hospital.—Applications

are invited for the post of HOUSE SURGEON from 1st August next. Candidates must be doubly qualified and registered. The appointment will be for six months, renewable at the pleasure of the Committee of Management. Salary £150, board and residence.

Applications, with copies (only) of testimonials, should be forwarded to the Secretary, Italian Hospital, Queen-square, London, W.C. 1, on or before Wednesday, 10th July next.

Derbyshire Royal Infirmary, Derby.

—There is a vacancy for a HOUSE SURGEON. Candidates must be qualified and registered under the Medical Acts.

Salary £200 per annum, with board, residence, &c.

Male applicants should be ineligible for Military Service.

The Hospital contains 367 beds, of which 170 are reserved for Soldiers.

By order.

25th June, 1918. WALTER BANKS, Superintendent.

Parish of Liverpool. — Resident

ASSISTANT MEDICAL OFFICER.—Wanted, Resident Assistant Medical Officer for the BROWNLOW HILL POOR LAW HOSPITAL, Liverpool. Male applicants must be enrolled or ineligible for Military Service. Salary at the rate of £300 per annum, with rations, &c. Applications in candidate's own handwriting, stating age and qualifications, and enclosing copies of testimonials, to be sent forthwith to the Clerk to the Select Vestry, Parish Offices, Brownlow Hill, Liverpool, and from whom all particulars can be obtained.

Lincoln General Dispensary. —

Wanted, a RESIDENT MEDICAL OFFICER, Male or Female, and unmarried. Candidates must be qualified to practise Medicine and Surgery, and be duly registered.

Salary £400 per annum, with furnished apartments, housekeeper, fire, and lighting provided.

The duties are to attend the sick poor in their own homes in the City of Lincoln and suburbs, and to prescribe for such patients.

There are no beds for patients in connexion with the Institution. About 90 per cent. of patients are women and children.

A Dispenser and Nurse are kept.

The person appointed will be required to enter upon the duties as soon as possible after the election, and give one month's notice prior to leaving.

Applications, stating age, with copies of three recent testimonials (which will not be returned), are to be sent to me on or before Thursday, 11th July, 1918.

2, Bank-street, Lincoln, 25th June, 1918. R. H. LYNN, Secretary.

Royal Free Hospital, Gray's Inn-road, W.C.

—Applications are invited from duly qualified and registered Women for the posts of HOUSE PHYSICIAN and CASUALTY HOUSE SURGEON.

Applications, with copies of testimonials, to be sent to the Secretary on or before July 13th, 1918.

County Hospital, York (230 beds, including 110 for Soldiers).

—Wanted, HOUSE PHYSICIAN (Lady). Candidates must be duly qualified and registered. Salary £200 per annum, with board, residence, &c. Applications, stating age, together with copies of not more than three recent testimonials, to be sent to the undersigned. FREDK. NEDEN, Secry. and Manager.

Royal Portsmouth Hospital.

—Required, about the middle of July, HOUSE SURGEON (ineligible for Military Service). Salary £200 per annum, with residence, board, and laundry.

Applications, stating age, and with copies of three recent testimonials, to be sent to the undersigned, from whom particulars can be obtained. B. WAGSTAFF, Secretary.

Liverpool Stanley Hospital.

—The Committee invite applications for the post of RESIDENT MEDICAL OFFICER, who must be fully qualified and on the Register. Candidates (either sex) will submit copies of three recent testimonials, stating essential particulars. Rooms, board, and laundry provided. Duties to commence July 8th next.

FRANK WHITE, Hon. Secretary.

Royal College of Surgeons of England.

ELECTION OF AN EXAMINER IN DENTAL SURGERY.

Notice is hereby given that the Council on the 25th proximo will proceed to the election of a Member of the Board of Examiners in Dental Surgery in the vacancy occasioned by the expiration of the period of office of Mr. Norman G. Bennett, who is re-eligible.

Persons duly registered under the Dentists Act of 1878 who are desirous of being appointed must make application in writing to the Secretary on or before the 17th proximo.

29th June, 1918. S. FORREST COWELL, Secretary.

Royal London Ophthalmic Hospital (MOORFIELDS EYE HOSPITAL), City-road, E.C.1.

Founded 1804.—Applications are invited from Women, or Men who are ineligible for Military Service, for the office of THIRD HOUSE SURGEON.

Candidates must be registered Medical Practitioners, and must be prepared to begin the duties on 1st August, 1918.

Salary at the rate of £100 a year, with board and residence in the Hospital.

Applications, stating age and qualifications, must be received by the Secretary-Superintendent not later than 3rd July.

The appointment is for a period of eight months.

25th June, 1918. ROBERT J. BLAKE, Secretary-Superintendent.

Parish of St. Pancras.—Guardians of THE POOR.

—The Guardians of the Poor of this Parish invite applications from duly qualified Medical Practitioners for the position, which will be vacant at the end of July, of ASSISTANT MEDICAL SUPERINTENDENT of the House and South Infirmary, Pancras-road, N.W., with salary at the rate of £300 per annum, with the usual residential allowances.

Further particulars as to the terms and conditions of appointment may be obtained from the Medical Superintendent, at the Infirmary. Applications may be made upon forms to be obtained at my office as below by forwarding a stamped addressed foolscap envelope.

J. E. P. HALL, Clerk to the Guardians.

Town Hall, Pancras-road, N.W.1.

INDIA OFFICE, LONDON, S.W.1.
June, 1918.

No competitive examinations for the Indian Medical Service are being held during the continuance of the war.

Such appointments as may be required to meet the absolutely indispensable needs of the Service are being made by nomination by the Secretary of State for India.

To assist him in making these appointments he has appointed a Selection Committee who summon and interview such candidates as may appear to be *prima facie* suitable and make recommendations for appointment.

Applications for appointment should be addressed to the Secretary of the Military Department, India Office, Whitehall, S.W.1, and should contain concise particulars of the applicant's medical degrees and career.

Applicants must be over twenty-one and under thirty-two years of age at the time of application.

Particulars regarding pay, promotion, &c., in the Service can be obtained from the Secretary, Military Department.

Leith Town Council. — Leith MATERNITY and CHILD WELFARE SCHEME. — WOMAN MEDICAL OFFICER.

—Applications are invited from duly qualified Women for the above appointment, at a salary at the rate of £400 per annum.

The officer appointed will be required to devote her whole time to the duties, under the Medical Officer of Health, and must reside within the Burgh. Preference will be given to one who holds a Diploma in Public Health. Further particulars of the duties and conditions of the appointment will be supplied on application. Applications, stating qualifications, and accompanied by copies of three recent testimonials, should be sent to me not later than July 2nd, 1918.

Town Hall, Leith. D. ROBERTSON, Town Clerk.

The Glasgow Eye Infirmary. — SUPERINTENDENT wanted (Lady might suit). Salary £250.

Applications in writing (which must state qualifications and be accompanied by copy testimonials) will be received by

38, West Regent-street, Glasgow. HAROLD J. BLACK, Secretary.

The Guest Hospital, Dudley (115 Beds).

—Appointment of MATRON.—The Committee invite applications for the post of Matron, at a salary of 100 guineas per annum, together with board, furnished apartments, and washing.

Candidates must be fully trained Nurses, certificated, have had experience in housekeeping, and the management and training of a nursing staff.

Applications, stating age (which must not be over forty years), where trained, previous experience, and enclosing copies of six recent testimonials, to be sent to the Chairman of the Committee not later than Thursday, July 18th, 1918. ARTHUR BIRD, Secretary.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service.

Pay £20 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks, according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Locum Tenens wanted immediately.

—Mr. Percival Turner requires reliable Gentlemen for Temporary and War Engagements, Town and Country.—Apply, personally if possible, or if by letter send full details and references, to 4, Adam-street, Strand, W.C.2.

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Five years qualified. Free for above period.—Address, No. 698, THE LANCET Office, 423, Strand, W.C.2.

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Oxfordshire.—A General Practice

situated in a charming district and producing over £750 per annum. Panel list 470. Fees 2s. 6d. to 21s. Public appointments £96 per annum. Excellent house, with good garden, coachman's cottage, garage, &c. Rent £60 per annum. Premium one year's purchase.—Quote Folio 557. Arnold & Sons, Transfer Department, 6, Giltspur-street, London, E.C.1 (opposite St. Bartholomew's Hospital).

To Purchasers. — Do not buy any Practice or Partnership without an investigation into books and other inquiries by an expert specially competent to conduct the same. Forty years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases.—Terms and full particulars free on application to 4, Adam-street, Strand, London, W.C.2. Telephone: 399 Gerrard. Telegrams: Epsomian, London.

London, S.E.—A Cash and Panel PRACTICE situated in a thickly populated district and producing about £1000 per annum. Panel list 1300. Corner house in central position; rent £45 per annum. Premium for quick sale £500.—Quote Folio 1007, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

For Disposal.—London.—Panel over 1500, and private practice making up about £1100 a year. Middle- and working-class patients. Premium £900, part by instalments.—Apply, No. 6295, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Hunts.—An unopposed General Prac- TICE in an Agricultural District producing about £1000 per annum. Panel list 700. Public Appointments £25 per annum. Splendid house containing five bedrooms, &c.; garden and garage; rent £32 10s. per annum. Premium £850.—Quote Folio 529, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

South Coast.—Urgent.—Over £1300 a year.—Same hands over thirty years. Easily worked. No car needed. No night work. M.O.H. Parish, Admiralty and other appointments. Panel 850. Large house, eight bedrooms, shady garden. Great scope. Premium moderate.—Apply, No. 6298, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Sussex.—A General Practice situated in a good district about forty miles from London and producing about £1000 per annum. Fees 2s. 6d. upwards. Panel £180 per annum. Excellent house, with garden, &c.; rent £75 per annum. Premium one year's purchase.—Quote Folio 764, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Partnership.—West County.—£1400 a year.—Old-established Practice in small Town on rail. No opposition for four miles. Easily worked. Half Share for disposal. To replace partner in R.A.M.C. Premium £700. Early succession if desired. Panel 1750.—Apply, No. 6239, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Berks.—An old-established General PRACTICE, situated in a charming district. Average receipts £650 per annum. Panel List 470. Fees 2s. 6d. upwards. Good house, containing four bedrooms, &c., garden and garage. Total rent £61 per annum, which includes common and fishing rights. Premium three-quarters of a year's purchase.—Quote Folio 989, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

For Disposal, unopposed very old- established PRACTICE in healthy and bracing village in Midlands. Worth about £1000 a year with great scope. Appointments nearly £200, panel 700. Very good detached family house and large garden. Hunting, shooting, fishing, &c. Personally investigated and recommended.—Apply, No. 6294, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Near Manchester.—A Cash and Panel PRACTICE, situated in a thickly populated and industrial district, and producing over £1500 per annum. Panel worth £860 per annum. Fees 2s. 6d. upwards. Rent of house £40 per annum. Rent of Branch £80 per annum. Ample scope for increase, and open to every investigation. Premium £1000.—Quote Folio 721, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Death Vacancy.—Over £2400 a year. —Old-established PRACTICE, late hands thirty years, in large Provincial Town. Panel 5000. Separate surgery for panel. No night work. Good house and large garden in residential suburb. Introduction by Locum and widow. Premium moderate.—Apply, No. 6302, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

For Sale, owing to family bereavement, an old established PRACTICE in Lancashire. Panel and private patients £600. Appointments £100. No Midwifery taken. Plenty of scope. Easily worked. House freehold. Sell or Let on lease. Previous to war total annual income over £1000. One year's purchase to an immediate buyer. Strictest inspection invited.—Address, No. 687, THE LANCET Office, 423 Strand, W.C. 2.

Spalteholz Atlas of Anatomy, Second-hand, wanted. Good condition and cheap. State edition and price to House Surgeon, Royal Hospital, Chesterfield.

For Sale, 5 vols. Scientific Memoirs of the late Professor HUXLEY. As new. Published at £5 15s. Now out of print. £7 10s.—Randall, 15, Southwood-avenue Highgate, N. 6.

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Write for the Burnol Booklet

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Severe burn of the right forearm at the commencement of the treatment with BURNOL.
Note the severity of the burn.

The above plates show the result of No. 7 Paraffin (Burnol brand) treatment applied according to the instructions, and under the direction of an eminent military surgeon.

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